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Live Well and Die with Inner Peace: The Importance of Retrospective Need-based Experiences, Ego Integrity and Despair for Late Adults' Death Attitudes

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Abstract

Given that prior research has provided evidence for the role of late adults' attitudes towards death in their mental health, we sought to understand its underlying sources. Guided by Self-Determination Theory and Erikson's theory of psychosocial development, two cross-sectional studies examined whether older individuals' psychological need-based experiences, as accumulated during life, relate to their death attitudes and whether their experienced ego integrity and despair play an intervening role in these associations. Whereas Study 1 ($N = 394$ late adults; $M_{age} = 75.14$; $SD = 6.52$; 62.9% female) involved an assessment of need satisfaction only, in Study 2 ($N = 126$ late adults; $M_{age} = 78.09$; $SD = 7.17$; 61.9% female) both need satisfaction and need frustration were assessed. Structural equation modeling showed that, across studies, experienced need satisfaction related positively to ego integrity and negatively to despair. Need frustration was related to despair only. In turn, ego integrity related positively to death acceptance and negatively to death anxiety, while despair related positively to death anxiety. Finally, the contribution of need satisfaction to death attitudes was mostly mediated by individuals' ego integrity. Theoretical and practical implications of these results are discussed.

Keywords: death anxiety, death acceptance, ego integrity, basic psychological needs, Self-Determination Theory.

During the last decades of life, older adults differ substantially in the way they cope with the increasing awareness of their mortality (Neimeyer, 1994). Whereas thoughts about death instill anxiety in some individuals, others more easily accept death as a natural and integral part of life that is neither welcomed nor feared. Research has shown that, whereas an accepting attitude towards death relates to more life satisfaction (Neimeyer et al., 2004) and to a greater sense of meaning in life (Boyras, Horne, & Waits, 2015), death anxiety relates positively to general anxiety and depression (Neimeyer, Wittkowski, & Moser, 2004) and negatively to a variety of indicators of adaptive functioning, including self-esteem, self-concept clarity, internal locus of control, self-realization, and existential well-being (Cozzolino, Blackie, & Meyers, 2014). In light of these findings, it is critical to identify the psychological sources underlying individuals' attitudes towards death. Based on Self-Determination Theory (SDT; Deci & Ryan, 2000; Ryan & Deci 2017) and Erikson's (1963) theory of psychosocial development, the overall aim of this study was to examine how older adults' individuals' need-based experiences, as accumulated across life, in combination with their successful resolution of the psychosocial crisis of ego integrity versus despair, relate to their death attitudes.

The Role of Retrospective Need-based Experiences among Older Adults

Within Self-Determination Theory (SDT; Deci & Ryan, 2000; Ryan & Deci, 2017), a broad theory on motivation, socialization, and personality development, it is assumed that people have a natural inclination to evolve towards higher levels of psychological maturity and integration as they grow older. With increasing age, people would develop a more coherent and authentic sense of self, which consists of a set of interrelated identities grounded in self-endorsed and integrated preferences, interests, and values (Ryan & Deci, 2003, 2017; Soenens & Vansteenkiste, 2011). People become increasingly skilled to stay true to themselves and to regulate their behavior on the basis of self-endorsed motives, which helps to explain why age relates positively to mental health (Sheldon, Arndt, & Houser-Marko, 2003; Sheldon, Kasser,

Houser-Marko, Jones, & Turban, 2005; Van der Kaap-Deeder, Vansteenkiste, Van Petegem, Raes, & Soenens, 2016).

A fundamental tenet in SDT is that this organismic tendency towards increasing identity integration, inner synthesis, and well-being requires satisfaction of three basic psychological needs, that is, the needs for autonomy, competence, and relatedness (Deci & Ryan, 2000; Vansteenkiste, Ryan, & Soenens, 2020). Autonomy satisfaction denotes the experience of a sense of volition and psychological freedom. Satisfaction of the need for competence refers to feeling a sense of mastery and effectiveness. Finally, relatedness satisfaction involves the experience of caring for and being cared for by important others. Need-frustrating experiences, on the other hand, refer to feelings of pressure and coercion (i.e., autonomy frustration), feelings of failure (i.e., competence frustration), and experiencing exclusion and loneliness (i.e., relatedness frustration).

Consistent with SDT, a vast number of studies have documented the beneficial effects of need satisfaction and the detrimental effects of need frustration for individuals' mental health (see for an overview Ryan & Deci, 2017; Vansteenkiste & Ryan, 2013). Although most of these studies focused on children, adolescents, and (young) adults, research increasingly demonstrates the importance of these psychological needs for the well-being among older adults as well (e.g., Custers, Westerhof, Kuin, Gerritsen, & Riksen-Walraven, 2013). Tang, Wang, and Guerrien (2019) showed in a meta-analysis of 17 studies among older adults that need satisfaction relates positively to psychosocial adjustment and well-being (e.g., more life satisfaction and fewer depressive symptoms). In addition to experiences of need satisfaction, Vanhove-Meriaux, Martinent, and Ferrand (2018) showed that experiences of need frustration among older people living at home play a supplementary role, with individuals experiencing high need satisfaction and low need frustration reporting the highest well-being (e.g., self-esteem) and lowest ill-being (e.g., depressive feelings). Moreover, a handful of longitudinal

studies found that need satisfaction contributes to increased psychological adjustment over a one-year period among nursing home residents (Phillippe & Vallerand, 2008) and better psychological adjustment to retirement over a six-year period (Houliort et al., 2015). Additionally, Henning, Bjälkebring, Stenling, Thorvaldsson, Johansson, and Lindwall (2019) showed in a large-scale study ($N = 5,074$) with annual assessments spanning four years that, after controlling for physical health, year-to-year variation in all three needs contributed to year-to-year variation in life satisfaction, while autonomy and relatedness satisfaction related to between-person differences in life satisfaction across this time frame. Finally, feelings of autonomy as assessed among nursing home residents (Kasser & Ryan, 1999) or as coded from essays written by nuns in the 1930s (Weinstein, Legate, Ryan, & Hemmy, 2019) have been found to predict reduced mortality risk.

Despite these studies showing the importance of need-related experiences among older adults, no study so far examined directly whether these experiences relate to individuals' death attitudes. Herein, we reasoned that individuals who have experienced a more fulfilling life characterized by feelings of volition, competence, and connectedness with important others would more easily come to terms with their own death. Previous research has indeed indicated that need-based experiences constitute core ingredients for a fulfilling existence, with need-based experiences of autonomy, competence, and relatedness being essential and salient ingredients of people's most satisfying (Sheldon, Elliot, Kim, & Kasser, 2001) and meaningful (Prentice & Fleeson, 2020) personal experiences in life. There is some indirect evidence for the importance of need-based experiences for older adults' death attitudes as feelings of autonomy (conceptualized mostly as independence) related negatively to fear of death, while environmental mastery (a concept related to the need for competence) correlated positively with death acceptance and negatively with fear of dying (Wettstein, Schilling, Reidick, & Wahl, 2015). Also, Van Hiel and Vansteenkiste (2009) showed among older adults that the attainment

of intrinsic goals (e.g., community contribution), which is assumed to foster need satisfaction (e.g., feeling related to others), related to more death acceptance and less death anxiety. In contrast, the attainment of extrinsic goals (e.g., financial success), which is expected to engender need frustration (e.g., feeling isolated from others), related to less death acceptance.

The Explanatory Role of Ego Integrity and Despair

Although a richer history of need-satisfying experiences throughout life may allow one to deal better with one's own final destiny, the question is which mechanisms may underlie this proposed relation. In an attempt to strive for a cross-fertilization between SDT and Erikson's personality theory (see also Luyckx, Vansteenkiste, Duriez, & Goossens, 2009), we considered the role of ego integrity and despair. According to Erikson (1963), each individual faces eight stages throughout life in which a certain conflict needs to be resolved between two developmental changes to develop a healthy personality. One or multiple needs are central during these stages, with need satisfaction both contributing to and following from the successful resolution of each conflict (Luyckx et al., 2009). To illustrate, during the first stage (i.e., trust versus mistrust, age 0 – 18 months) consistent and predictable care from the primary caregiver is essential, with the need for relatedness thus playing a critical role. The need for autonomy is more central during the second stage (i.e., autonomy versus shame and doubt, age 18 - 36 months), where children want to gain a sense of control over their life. During the fourth stage (i.e., industry versus inferiority, age 5 - 12 years), the need for competence is vital as children in this age period are expected to develop new skills, entailing a sense of pride.

An essential assumption in Erikson's (1963) theory is that each stage builds on the preceding stages and paves the way for the following periods, an assumption that has received empirical support (e.g., Torges, Stewart, & Duncan, 2008). Thus, a successful resolution of previous psychosocial conflicts, which is fostered by need satisfaction, is expected to increase one's success during the final stage of life. This last stage of individuals' psychosocial

development, taking place from approximately the age of 65, consists of exploring and contemplating past life events in an attempt to find meaning and to reconcile positive and negative past events. When individuals succeed in this task, they achieve a sense of *ego integrity*, which is characterized by experiencing unity, harmony, and completeness in one's identity and life as a whole. In contrast, when individuals fail to find meaning in their past life, they experience a sense of *despair*. Despair is characterized by feelings of regret, bitterness, and disappointment over a life misspent. Whereas ego integrity relates positively to mental health and to a lower risk for depressive symptoms, despair shows an opposite pattern of associations (e.g., Derdaele, Toussaint, Thauvoye, & Dezutter, 2017; Van Hiel & Vansteenkiste, 2009).

Within SDT it is assumed that need-based experiences are crucial for individuals' process of ego integrity (Deci & Ryan, 2000; Ryan & Deci, 2017; Weinstein, Przybylski, & Ryan, 2013). When older adults perceive their life to be filled with experiences of volition, mastery, and interpersonal care, they are more likely to achieve unity, harmony, and completeness in their functioning, signaling a higher level of ego integrity. Experiences of need frustration, on the other hand, would be an obstacle to achieve such integration. That is, when individuals' life is characterized by experiences of pressure, failure, and social isolation, they are likely to experience difficulties in finding meaning in their life (Martela, Ryan, & Steger, 2018) and accepting these past experiences, thereby leaving them with a sense of despair as their time is gradually running out.

A few previous studies provided initial evidence for this reasoning. With respect to ego integrity, James and Zarrett (2006) reported that older women's current feelings of autonomy, mastery, and connectedness with others related positively to their ego integrity. Similarly, Ferrand, Martinent, and Durmaz (2014) found need satisfaction among adults aged 80 years and older to be positively associated with purpose in life, a concept closely related to ego

integrity. Additionally, Van der Kaap-Deeder et al. (2016) showed that self-congruence (i.e., experiencing oneself as the author of one's behaviors), signaling elevated autonomy need satisfaction, related positively to connection with and acceptance of past life events among adults aged 60 years and older.

Achieving ego integrity is likely to be important for individuals to develop an accepting attitude towards death. When individuals experience a sense of harmony and completeness in their identity, they may more easily consider their death as an integral and unchangeable part of life. In contrast, despair over a misspent life is likely to contribute to fear of death because the time to correct unresolved problems or undo made decisions is running out. Current evidence for the link between ego integrity and death attitudes is rather indirect because most studies used proxies for operationalizing ego integrity, such as measures of life satisfaction and purpose in life (Busch, Hofer, Solcova, & Tavel, 2018; Fortner & Neimeyer, 1999). In one study among older adults that directly tapped into ego integrity and despair (Van Hiel & Vansteenkiste, 2009), ego integrity related positively to death acceptance, while despair related negatively to death acceptance and positively to death anxiety.

The Present Research

Given the well-documented benefits of older adults' accepting attitude towards their death, the overall aim of this study was to investigate its underlying sources. If experiences of need satisfaction are as critical for our organismic functioning as suggested by self-determination theorists (Ryan & Deci, 2017; Vansteenkiste et al., 2020), those being capable of accumulating greater need satisfaction throughout their lives, as retrospectively reported, should be more 'ready' to die. The reason for this is that need satisfaction, as accumulated throughout one's life, may allow for a smoother and more successful resolution of the last developmental task in one's life, that is, achieving a sense of ego integrity and avoiding experiences of despair. To examine these hypothesized relations, two cross-sectional studies

among late adults were conducted. Whereas Study 1 focused on the role of need satisfaction, Study 2 additionally considered the role of need frustration. Across both studies, we hypothesized that retrospective need satisfaction would relate positively to death acceptance and negatively to death anxiety, whereas an opposite pattern of relations was expected for retrospective need frustration (Hypothesis 1). Additionally, in accordance with the assumption of an adaptive and maladaptive pathway concerning the outcomes of need-based experiences (Vansteenkiste & Ryan, 2013), we hypothesized that whereas need satisfaction (as examined in both studies) would be especially related to death acceptance via ego integrity (Hypothesis 2), need frustration (as examined in Study 2) would mostly relate to death anxiety through enhanced despair (Hypothesis 3). We also considered possible cross-paths from need satisfaction to despair or death anxiety and need frustration to ego integrity and death acceptance, but expected these cross-paths to be less pronounced.

Study 1

In Study 1 we examined the role of late adults' need satisfaction as experienced throughout life in their death attitudes, thereby distinguishing between an accepting and anxious attitude towards death. Further, to shed light on the mechanisms underlying this relation, we considered the mediating role of ego integrity and despair.

Method

Participants and Procedure

Participants were 394 late adults ($M_{age} = 75.14$; $SD = 6.52$; range: 60 – 95 years) of which 62.9% was female. Regarding participants' marital status, 53.3% was married, 40.6% was a widow(er), 5.1% was divorced, and 1.0% was single. On average, participants had about 3 children and 6 grandchildren. The highest level of education obtained was 27.9% primary school, 50.3% high school, and 21.8% higher education. Undergraduate students, across three academic years, recruited participants in return for credits with respect to a course on

developmental psychology. To ensure that participants would be recruited in a standardized way, students received a one-hour information session about the purpose of the study and the recruitment procedures. Students were asked to invite individuals of at least 65 years old who were willing to participate in the study and they were encouraged to recruit equal numbers of men and women. In line with the university's ethical guidelines (this research was exempt with regards to ethical approval, due to the non-intrusive nature of these studies), undergraduate students informed participants that the data would be processed in a confidential way, that their participation was voluntary, and that they were entitled to terminate their participation at any moment.

Measures

Retrospective Need Satisfaction. We assessed need satisfaction with the Basic Psychological Need Satisfaction and Need Frustration scale (BPNSNF; Chen et al., 2015), which was slightly adapted to assess need satisfaction throughout life. Example items are “The choices that I made in my life were overall based on my genuine interests and values” (autonomy satisfaction, 4 items), “I feel that in my life I have successfully completed difficult tasks” (competence satisfaction, 4 items), and “I feel that during my life I have been in contact with friends who cared for me, and for whom I cared” (relatedness satisfaction, 4 items). Items were rated on a 5-point Likert scale, ranging from 1 (*Completely untrue*) to 5 (*Completely true*). Cronbach's alpha of the 12 items was .85.

Ego Integrity and Despair. To assess ego integrity and despair, we employed the scale developed by Van Hiel and Vansteenkiste (2009). Example items are “I have learned to accept myself and others as I became older” (ego integrity; 8 items) and “I look back upon my life with a feeling of discontent and regret” (despair; 10 items). Items were rated on a 5-point Likert scale, ranging from 1 (*Completely disagree*) to 5 (*Completely agree*). Cronbach's alphas were .71 for ego integrity and .77 for despair.

Death Acceptance and Death Anxiety. The ‘neutral acceptance’ and ‘fear of death’ subscales of the Death Attitude Profile-Revised (DAP-R; Wong, Reker, & Gesser, 1994) were used to assess individuals’ death acceptance and death anxiety, respectively. We chose to focus on the subscale of neutral acceptance (i.e., assessing an attitude that regards death as an integral and natural part of life that is neither welcomed nor feared), because previous research showed that especially neutral acceptance was predictive of individuals’ well-being (Neimeyer et al., 2004). Example items are “Death should be viewed as a natural, undeniable, and unavoidable event” (death acceptance; 5 items) and “Death is no doubt a grim experience” (death anxiety; 7 items). Items were rated on a 7-point Likert scale, ranging from 1 (*Completely untrue*) to 7 (*Completely true*). Cronbach’s alphas were .66 for death acceptance and .80 for death anxiety.

Results

Descriptive Statistics and Preliminary Analyses

Descriptive statistics and bivariate correlations among the measured variables can be found in Table 1. The means reveal that participants, on average, experienced a high level of need satisfaction throughout their life. Participants also reported a high level of ego integrity and low to moderate levels of despair. Interestingly, although participants on average indicated to experience a high level of death acceptance, they also reported a moderate level of death anxiety. Correlational analyses showed that need satisfaction related positively to ego integrity and death acceptance and negatively to despair, whereas it was unrelated to death anxiety. Further, ego integrity related positively to death acceptance and negatively to death anxiety, whereas despair related only to individuals’ death anxiety.

To examine the relation between a number of background variables and the outcome variables, a MANOVA was performed. Specifically, age, education level, number of children, and number of grandchildren were entered as covariates and gender and marital status (married, divorced, or widow(er)) were entered as fixed factors. Note that the category ‘single’ regarding

marital status was not included in this analysis because there were only three persons in this category. Results showed that gender ($F(4, 369) = 3.62, p = .01, \eta^2 = .04$) and marital status ($F(8, 738) = 3.10, p < .01, \eta^2 = .03$) were significantly related to the outcome variables. Specifically, women ($M = 3.64; SD = 1.53$) experienced more death anxiety than men ($M = 3.16; SD = 1.38$); $F(1, 372) = 9.56, p < .01, \eta^2 = .03$. Further, divorced participants ($M = 4.39; SD = 0.47$) reported more ego integrity than married ($M = 3.99; SD = 0.58$) or widowed ($M = 4.00; SD = 0.56$) participants; $F(2, 372) = 4.53, p = .01, \eta^2 = .02$. Also, divorced participants ($M = 2.84; SD = 1.35$) experienced less death anxiety than married participants ($M = 3.57; SD = 1.56$); $F(2, 372) = 3.53, p = .03, \eta^2 = .02$. Based on these findings, we controlled for gender and marital status in our main models.

Primary Analyses

The main hypotheses were examined by estimating path models using MPlus 8.3 (Muthén & Muthén, 1998-2017) through a robust maximum-likelihood approach. We employed several indices to evaluate the fit of these path models, namely the χ^2 test, the comparative fit index (CFI), the standardized root mean square residual (SRMR), and the root mean square error of approximation (RMSEA). An acceptable fit was indicated by χ^2/df ratio of 2 or below, CFI values of .95 or above, SRMR values of .08 or below, and RMSEA values of .06 or below (Hu & Bentler, 1999; Kline, 2005). There were no missing data. To test the significance of indirect effects (i.e., from need-based experiences to death attitudes via ego integrity and despair), we used bootstrapping (using 1,000 draws) (Preacher & Hayes, 2008).

The Relation between Retrospective Need Satisfaction and Death Attitudes. In a first path model, we entered need satisfaction as predictor of death acceptance and death anxiety. This model had a good fit; $\chi^2/df = 0.00$; CFI = 1.00; SRMR = .00; RMSEA = .00. Results showed that need satisfaction related positively to death acceptance ($\beta = .19; p < .001$)

and was unrelated to death anxiety ($\beta = -.06$; $p = .28$). Further, death acceptance and death anxiety were weakly and negatively correlated ($r = -.20$; $p < .001$).

The Intervening Role of Ego Integrity and Despair. In a second path model, we built upon our first model by adding ego integrity and despair as intervening variables in the relation between need satisfaction and death attitudes. This model had a good fit; $\chi^2/df = 1.68$; CFI = .99; SRMR = .01; RMSEA = .04. As displayed in Figure 1, need satisfaction was related to both ego integrity and despair, yet in opposite ways. Ego integrity, in turn, related positively to death acceptance and negatively to death anxiety. Despair showed a more limited effect, as it only related positively to death anxiety. Three indirect effects were found to be significant. That is, need satisfaction related via ego integrity to both death acceptance (95% CI [.073, .180]) and death anxiety (95% CI [-.079, -.003]) and via despair to death anxiety (95% CI [-.086, -.013]).

Brief Discussion

Results showed that retrospective need satisfaction was associated with greater death acceptance through individuals' level of ego integrity. Also, need satisfaction related to less anxiety concerning one's own death, through lower levels of despair and through higher levels of ego integrity. Interestingly, there seem to be two pathways leading up to death attitudes, with ego integrity being mostly related to an adaptive attitude towards death (i.e., death acceptance) and with despair being only predictive of death anxiety.

Study 2

The aim of Study 2 was twofold. First, given this is the first time this integrated model was tested, we aimed to replicate the basic pattern obtained in Study 1. Second, apart from retrospective need satisfaction, we also included a measure of need frustration to examine its additional explanatory power. Especially the observed association between need satisfaction and despair may disappear after bringing in need frustration as a second predictor. This is because the active frustration of the psychological needs throughout one's life would be

required for older adults to experience serious regret and bitterness about past life choices. Thus, by considering both the ‘bright’ role of need satisfaction and the ‘dark’ role of need frustration, we aimed to achieve a more complete insight in the role of different need-dynamics in older individuals’ resolution of the conflict between ego-integrity and despair and in the death attitudes associated with this conflict.

Method

Participants and Procedure

Participants were 126 late adults ($M_{age} = 78.09$; $SD = 7.17$; range: 65 – 96 years), of which 61.9% were female. Regarding participants’ marital status, 56.3% was married, 36.5% was a widow(er), 6.3% was divorced, and 0.8% was single. On average, participants had about 3 children and 5 grandchildren. The highest level of education obtained was 14.3% primary school, 61.1% high school, and 24.6% higher education. Undergraduate students, across three academic years, recruited participants in return for credits with respect to a course on developmental psychology. To ensure that participants would be recruited in a standardized way, students received a one-hour information session about the purpose of the study and the recruitment procedures. Whereas students in the first academic year were asked to invite individuals of at least 65 years old, students in the subsequent two academic years were asked to recruit individuals of at least 70 years old. No guidelines were provided with respect to the gender of the participants. These dissimilarities across years (with respect to the age requirement) and across these two studies (with respect to the gender requirement) were due to differences and changes in the content of the courses of developmental psychology involved. In line with the university’s ethical guidelines, undergraduate students informed participants that the data would be processed in a confidential way, that their participation was voluntary, and that they were entitled to terminate their participation at any moment, without consequences.

Measures

We used measures identical to Study 1 to assess ego integrity ($\alpha = .67$), despair ($\alpha = .77$), death acceptance ($\alpha = .64$) and death anxiety ($\alpha = .80$). Two items (i.e., “I am not afraid of death, but I am also not waiting for it” and “Death is neither good nor bad”) of the subscale death acceptance were left out, due to low correlations with the other items of this scale. Besides these measures, we also employed a measure to assess both need satisfaction and need frustration across life (see below).

Retrospective Need Satisfaction and Need Frustration. Need satisfaction was again assessed with the Basic Psychological Need Satisfaction and Need Frustration scale (BPNSNF; Chen et al., 2015), but this time we also included the twelve items assessing need frustration. Example items regarding need frustration are “Most of the things I did in my life felt like an obligation” (autonomy frustration, 4 items), “In my life I experienced feelings of failure, as if I was unable to complete something successfully” (competence frustration, 4 items), and “In my life I had the feeling that people were cold and distant towards me” (relatedness frustration, 4 items). Items were rated on a 5-point Likert scale, ranging from 1 (*Completely disagree*) to 5 (*Completely agree*). Cronbach’s alpha was .78 for need satisfaction and .80 for need frustration.

Results

Descriptive Statistics and Preliminary Analyses

Descriptive statistics and bivariate correlations among the measured variables can be found in Table 2. The means revealed a similar pattern as in Study 1. Additionally, individuals reported having experienced a moderate level of need frustration throughout their life. Correlational analyses showed that need satisfaction related positively to ego integrity and death acceptance, whereas it was negatively related to despair and death anxiety. Need frustration, on the other hand, related positively to despair and death anxiety. Further, ego integrity related

positively to death acceptance and negatively to death anxiety, whereas despair related only to individuals' death anxiety.

Then, we performed a MANOVA to examine the relation between background variables and the outcome variables. Specifically, age, education level, number of children, and number of grandchildren were entered as covariates and gender and marital status (married, divorced, or widow(er)) were entered as fixed factors. The category 'single' regarding marital status was again not included in this analysis because there was only one person in this category. Results showed that only gender was significantly related to the outcome variables; $F(4, 113) = 4.00, p = .01$. As in Study 1, women ($M = 3.62; SD = 1.57$) experienced a higher level of death anxiety than men ($M = 2.81; SD = 1.19$); $F(1, 116) = 7.46, p = .01, \eta^2 = .06$. Based on these findings, we controlled for gender in our main models.

Primary Analyses

There were no missing data.

The Relations between Retrospective Need-based Experiences and Death Attitudes. In a first path model, we entered need satisfaction and need frustration as predictors of death acceptance and death anxiety. This model yielded a good fit ($\chi^2/df = 0.17$; CFI = 1.00; SRMR = .01; RMSEA = .00). Results indicated that need satisfaction was related positively to death acceptance ($\beta = .33; p < .001$) and negatively to death anxiety ($\beta = -.24; p = .01$). Surprisingly, need frustration was unrelated to death anxiety ($\beta = .12; p = .13$), yet was related positively to death acceptance ($\beta = .18; p = .03$).¹ Further, need satisfaction and need frustration were moderately negatively correlated ($r = -.32; p < .001$). Death acceptance and death anxiety were uncorrelated ($r = -.16; p = .05$).

The Intervening Role of Ego Integrity and Despair. In a subsequent path model, we built upon the first model by adding ego integrity and despair as intervening variables between retrospective need-based experiences and death attitudes. This model yielded a good fit (χ^2/df

= 1.56; CFI = .97; SRMR = .04; RMSEA = .07). As displayed in Figure 2, both need satisfaction and need frustration related to despair, whereas only need satisfaction was predictive of ego integrity. Further, we found that while ego integrity related to both death acceptance and death anxiety, despair was unrelated to the death attitudes. In addition, results showed that need satisfaction also related directly and positively to death acceptance. Two indirect effects were found to be significant. That is, need satisfaction related via ego integrity to both death acceptance (95% CI [.001, .161]) and to death anxiety (95% CI [-.195, -.031]).

Brief Discussion

Similar to Study 1, we found that ego integrity related to both death acceptance and death anxiety. Despair, however, was unrelated to individuals' death attitudes, possible due to a lack of power. Also in line with Study 1, results showed that need satisfaction was related to both types of death attitudes in the expected manner. This study built further on Study 1 by also including retrospective experiences of need frustration. Quite surprisingly, need frustration related positively to death acceptance, although this effect disappeared in the full model where the intervening role of ego integrity and despair was also modeled. Additionally, we found that a higher level of need frustration related to more despair, but was unrelated to ego integrity. Interestingly, results also revealed a direct effect from need satisfaction to death acceptance, indicating that need satisfaction not only relates to an accepting attitude towards death via the process of ego integrity and despair. Finally, the two significant indirect effects showed that need satisfaction related to both types of death attitudes through ego integrity.

General Discussion

Past research has shown that adaptive attitudes toward death, such as seeing death as a natural and integral part of life, are beneficial for older adults' well-being (e.g., Cozzolino et al., 2014; Neimeyer et al., 2004). Relatively little is known, however, about why individuals differ in their attitudes towards death. As research from a Self-Determination Theory

perspective has demonstrated the importance of satisfaction of the basic psychological needs for autonomy, competence, and relatedness for mental health and integrative functioning in late adulthood (e.g., Sheldon et al., 2003), we aimed to examine the role of older adults' need-based experiences in their death attitudes. In doing so, we asked participants to reflect on their lives and retrospectively recall to what extent they got their psychological needs met throughout their lives. The decision to focus on accumulated or lifespan instead of current need-based experiences was guided by our choice to study the intervening role of individuals' successful resolution of the psychosocial crisis of ego integrity versus despair, as proposed by Erikson (1963). Accumulated need satisfaction then serves as a proxy for the successful resolution of developmental crises during past life stages, which feeds into older adults' capacity to handle the final conflict they face. Thus, we considered the role of ego-integrity and despair in the relation between retrospective need-based experiences and death attitudes across two cross-sectional studies.

A first aim of this study was to determine the role of retrospective need-based experiences in older adults' death attitudes. In both studies, we focused on need satisfaction, whereas the role of need frustration was only investigated in the second study. Across both studies, need satisfaction was positively associated with death acceptance, whereas only in Study 2 it also related to less death anxiety. These findings indicate that the satisfaction of the needs for autonomy, competence, and relatedness, as experienced throughout life, plays an *acceptance-enabling* role. The elevated presence of need satisfaction suggests that these older adults have made more fitting and appropriate choices in life that come with greater experiences of effectiveness, connection, and volition. As need satisfaction signals greater self-realization, it is easier for them to come to terms with their death.

This finding is in line with previous studies showing current need experiences to be essential across the lifespan, also during (very) late adulthood (e.g., Kasser & Ryan, 1999).

Retrospective need frustration was only measured in Study 2, where it related positively to death acceptance. However, given the non-significant zero-order correlation between these constructs, this significant effect in the path model is likely indicative of a suppressor effect rather than a substantial association.

Given that accumulated experiences of need satisfaction relate to more adaptive death attitudes, an important next step is to examine what mechanisms underlie this relation. According to Erikson's personality theory (1963), successful resolution of the psychosocial crisis of ego integrity versus despair is essential during individuals' last phase of life. Only when individuals are able to see their past life as meaningful and are capable of accepting past mistakes, they can achieve a sense of ego integrity, which is conducive to seeing death as a natural and integral part of life. Results indeed showed that especially a sense of ego integrity related to both more acceptance of and less anxiety towards death. Despair, which is characterized by feelings of regret and failure, was only modestly related to individuals' death attitudes with only a positive relation found with death anxiety in Study 1. Possibly, we had insufficient power to detect a relation between despair and death anxiety in Study 2. Results also showed that experiences of need satisfaction throughout life (as retrospectively recalled) were conducive to adaptive death attitudes mostly through heightened ego integrity but also through lower despair.

So, when individuals hold a belief that the life they have lived was satisfying, entailing experiences of deep social connectedness, choice and personal freedom, mastery and success, they are more likely to perceive their life to be meaningful and, thereby, be more accepting of instead of defensively dealing with their final destiny. In contrast, when individuals feel their life has been difficult and filled with frustrating experiences such as social exclusion, pressure, and failure, they are more inclined to look back at their life with regret or bitterness which comes with a more anxious attitude towards their own death.

These findings are in line with SDT's (Deci & Ryan, 2000) claim that need satisfaction is crucial for experiencing one's life as coherent, purposeful, and fulfilling. The findings also resonate with Erikson's (1963) lifespan perspective which suggests that the handling of the final crisis of ego integrity versus despair depends on the successful resolution of the previous seven crises. Each of these crises center around one or more of the psychological needs and entail varying levels of need satisfaction which get accumulated throughout the lifespan. Achieving ego integrity can be seen as the "fruit of these seven stages" (Erikson, 1963, p. 168), with the accumulated need satisfaction throughout one's life being implicated in this final conflict.

Limitations

This study had several limitations. Our sample was recruited via undergraduate students. Although this recruitment method has been successfully used in multiple previous studies (e.g., Van der Kaap-Deeder et al., 2016), this approach might have resulted in a rather selected set of samples which can limit the generalizability of the current findings. Also, we only focused on death acceptance and death anxiety. There are, however, also other death attitudes such as approach acceptance (in which death is seen as a gateway to a better afterlife) and escape acceptance (in which death is seen as an alternative to a painful existence) (Wong et al., 1994), which would be interesting to include in future studies.

Another important limitation of the current study concerns the assessment of need-based experiences. This was now done retrospectively, with older adults reporting on the degree to which they experienced need satisfaction and need frustration throughout life. Such retrospective assessment could be partially colored by individuals' current affect and need-based experiences. Therefore, it would be important for future studies to adopt a longitudinal design in which need-based experiences are assessed at several time points throughout life, so that more insight can be achieved with respect to the role of lifespan need-based experiences in the resolution of the crisis concerning ego integrity.

Future Challenges

In the current research, we focused on the degree to which retrospective need-based experiences relate to individuals' ego integrity and death attitudes. Previous theorizing in the domains of developmental psychology (Erikson, 1950), clinical psychology (Rogers, 1963), personality psychology (Ryan, 1995), and cognitive psychology (Ehlers & Clark, 2000) also highlight the importance of integration or the process of acknowledging past negative events and synthesizing these events with positive events into a coherent whole. Future research could assess both lifespan need-based experiences as well as the integration of such experiences, thereby focusing for instance on the degree to which individuals ruminate over or accept past need-frustrating events. Past research indeed showed that when older adults ruminate less over need-related past events, while experiencing a high level of acceptance and connection concerning these events, they experience more positive affect relating to these past events (Van der Kaap-Deeder et al., 2016).

On a theoretical level, this research contributes to the emergence of existential positive psychology, in which existential questions and death attitudes are seen within a positive psychology framework emphasizing individuals' growth tendencies, authenticity, and courage (Ryan & Deci, 2004; Van Hiel & Vansteenkiste, 2009; Wong, 2008). For instance, Wong's (2008) Meaning Management Theory represents a conceptual framework to understand death acceptance, where the process of meaning-making is seen as a protective factor against the fear of death. Thus, instead of defensively coping with one's approaching death by denial, the most effective way of dealing with death is living a fulfilling and meaningful life or, in other words, to die with inner peace is to live well.

These findings have therapeutic implications, as coming to terms with past events plays a central role in different treatments. For example, a central goal in life review therapy is to emotionally process events from one's past (Karel & Hinrichsen, 2000). It is less clear to date

what the most essential past experiences are and, based on the results of this research, treatments involving reminiscence could focus on the integration of need-based experiences. Specifically, older adults could be encouraged to more often recollect in detail important need-satisfying memories (e.g., their wedding or graduation day) and to reconcile or accept past need-frustrating events (e.g., a divorce or the loss of a loved one).

Conclusion

At the end of life, death becomes more salient and individuals may cope with this approaching event in different ways. The current research shows that having experienced a need-fulfilling life fosters the capacity to find meaning in one's life and to come to terms with negative past events. Achieving such level of ego integrity was found to relate to experiencing death as a more natural event that does not have to be feared.

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Footnote

1. The positive relation between need frustration and death acceptance should be interpreted with caution, given that the zero-order correlation indicated no relation between these constructs (i.e., $r = .08$). The significant relation found in the path model suggests a suppressor effect where the addition of a predictor (in this case, need satisfaction) increases the predictive power of another variable (in this case, need frustration).

Table 1

Descriptives of and Correlations between the Study Variables (Study 1)

	Mean	SD	1	2	3	4
1. Need satisfaction	3.81	0.54	-			
2. Ego integrity	3.99	0.56	.40***	-		
3. Despair	2.30	0.70	-.24***	-.08	-	
4. Death acceptance	5.95	1.03	.19***	.31***	-.03	-
5. Death anxiety	3.45	1.49	-.06	-.12*	.19***	-.21***

Note. All constructs were assessed on a 5-point Likert scale, except for death acceptance and death anxiety which were assessed on a 7-point Likert scale.

* $p < .05$; *** $p < .001$.

Table 2

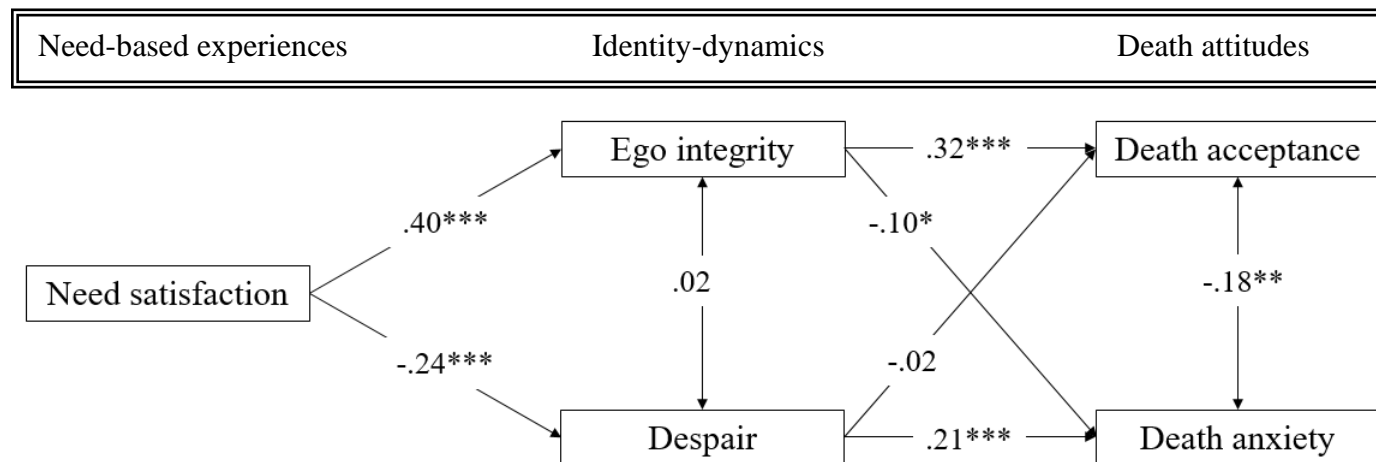
Descriptives of and Correlations between the Study Variables (Study 2)

	Mean	SD	1	2	3	4	5
1. Need satisfaction	3.95	0.45	-				
2. Need frustration	2.40	0.59	-.32***	-			
3. Ego integrity	4.05	0.53	.44***	-.16	-		
4. Despair	2.12	0.68	-.33***	.41***	-.20*	-	
5. Death acceptance	6.45	0.99	.28**	.08	.24**	-.02	-
6. Death anxiety	3.29	1.49	-.30**	.20*	-.25**	.22*	-.23*

Note. All constructs were assessed on a 5-point Likert scale, except for death acceptance and death anxiety which were assessed on a 7-point Likert scale.

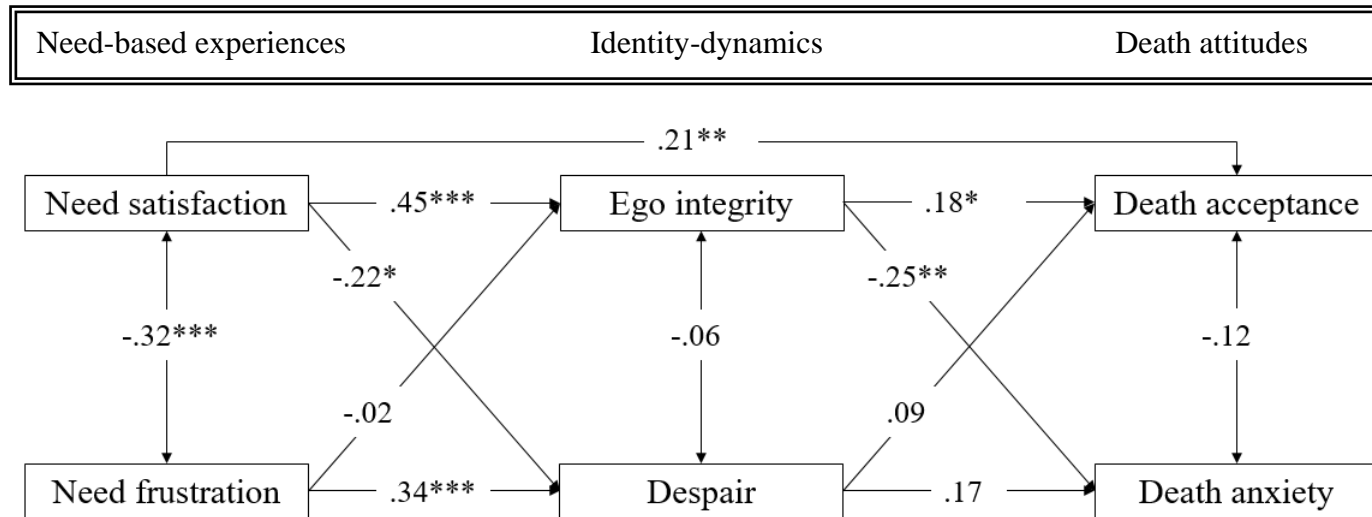
* $p < .05$; *** $p < .001$.

Figure 1. Structural Path Model Depicting the Relation between Need Satisfaction, Ego Integrity and Despair, and Death Attitudes (Study 1).



Note. $*p < .05$; $**p < .01$; $***p < .001$.

Figure 2. Structural Path Model Depicting the Relation between Need-based Experiences, Ego Integrity and Despair, and Death Attitudes (Study 2).



Note. $*p < .05$; $**p < .01$; $***p < .001$.