Life Satisfaction Shows Terminal Decline in Old Age: Longitudinal Evidence from the German Socio-Economic Panel

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Abstract

22-year data from deceased participants of the German Socio-Economic Panel Study (SOEP; N = 1,637; 70 to 100 year olds) were used to examine if and how life satisfaction exhibits terminal decline at the end of life. Changes in life satisfaction were more strongly associated with distance-to-death than with age. Multi-phase growth models were used to identify a transition point about four years prior to death wherein the prototypical rate of decline in life satisfaction tripled from –0.64 to –1.94 T-score units per year. Further individual-level analyses suggest that individuals dying at older ages spend more years in the terminal periods of life satisfaction decline than individuals dying at earlier ages. Our evidence suggests that late-life changes in aspects of well-being are driven by mortality-related mechanisms.

Theoretical Background

Does terminal decline extend to self-related evaluations of well-being?

- Late-life functioning may be mortality-related rather than age-related (Kleemaier, 1962; Riegel & Riegel, 1972)
  - for cognitive functioning, low levels and pronounced declines are linked to imminent death (e.g., Small & Bäckman, 1999; Berg, 1996)
  - terminal decline encompasses two phases of change: Pre-terminal → terminal (e.g., cognition: Sliwinski et al., 2006; Wilson et al., 2003, 2007)
- Less is known about mortality-related changes in aspects of well-being
  - terminal decline may affect age-insensitive domains more strongly (White & Cunningham, 1988)
  - levels of well-being predict mortality (e.g., Danner et al., 2001; Levy et al., 2002; Maier & Smith, 1999)

Do individuals differ in the timing of the onset of terminal decline in well-being?

- the experience of old age differs largely between individuals (Baltes, Reese, & Nesselroade, 1977; Wohlwill, 1973)
  - for cognitive functioning, mortality-related declines are often greater in very old age (e.g., Bäckman & MacDonald, 2006)
  - Self-protective processes become increasingly vulnerable in advanced old age (Baltes & Smith, 2003)
- It is an open question if impending mortality has more detrimental effects on well-being at older ages
  - initial evidence that mortality-related decline in well-being is steeper among the oldest old (Berlin Aging Study: Gerstorf, Ram, Röcke, Linenberger, & Smith, 2008)

Method

Sample

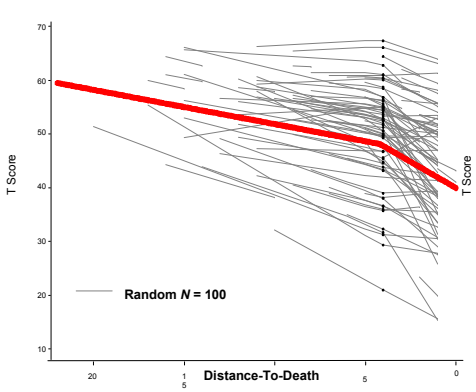
- subset of a large nationally representative elderly sample
- *N* = 1,637 individuals (44% women) who died over a period of 22 years
- up to 21 yearly measurement occasions
- Age at T1: 70 – 100 years (*M* = 78 years)
- Age at death: 72 – 100 years (*M* = 82 years)
- On average, death occurred 9 years after T1 and 2 years after last assessment

Measures

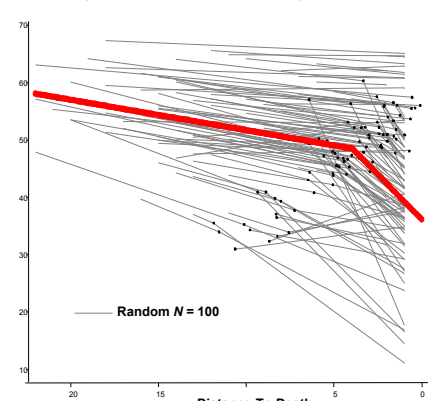
- single item assessing life satisfaction (see Fujita & Diener, 2005)
  "How satisfied are you with your life, all things considered?"
- answered on a 0–10 Likert scale
- standardized to a T metric with the total sample (~25,000) as the reference
- Covariates: chronological age, gender, education

Results

On average, life satisfaction decline steepened some 4 years prior to death by a factor of 3



Individuals greatly differ in the onset of terminal decline
(n = 400 with 12+ observations)



Fixed effects			
Intercept	42.10 (0.45)	42.30 (0.39)	48.14 (0.42)
Slope 1	–0.63 (0.04)	–1.02 (0.05)	–0.64 (0.06)
Slope 2	–	–	–1.94 (0.15)
Random effects			
Intercept	159.78 (10.82)	169.76 (8.67)	128.60 (7.02)
Slope 1	0.65 (0.08)	0.93 (0.11)	0.78 (0.14)
Slope 2	–	–	9.11 (1.20)
Residual	107.51 (1.74)	104.95 (1.70)	97.49 (1.66)
AIC	80,008	79,645	79,445

Fixed effects	
Intercept	48.65 (0.78)
Change point	3.67 (0.69)
Slope 1	–0.28 (0.10)
Slope 2	–3.51 (0.83)
Random effects	
Intercept	84.85 (10.70)
Change point	12.08 (2.95)
Slope 1	0.26 (0.12)
Slope 2	5.28 (1.74)
Residual	87.86 (2.66)

Onset of terminal decline		
	fixed	random
DIC	30,543	30,383

Regression analyses of terminal decline onset:
– individuals dying at later ages spent more time in terminal phases of decline

Discussion

Late-life changes in well-being are characterized by terminal decline

- Individual differences in life satisfaction change were better described by a distance-to-death than an age metric.
- With impending death, it is increasingly difficult to maintain well-being.
- Approaching death encompasses processes that are distinct from and add to normative age-graded processes.
- Extending initial evidence from the Berlin Aging Study to a nationally representative elderly sample.

Individuals differ in the timing of the onset of terminal decline in well-being

- Using a subset of participants with extensive longitudinal data (~12+ occasions) allowed considering transitions to terminal decline at the individual level:
  - some enter earlier (e.g., six years prior to death), some later (e.g., one year prior), some not at all
- Men and women and individuals at different educational levels experienced comparable changes in well-being.
- Years prior to death appear more dysfunctional in older ages: Seven more months spent in terminal phases of decline per additional decade lived.

Open questions

- What accounts for mortality-related decline in well-being?
  (e.g., conditions associated with the process of dying: cardiovascular vs. debilitating diseases)
- When and how do end-of-life declines proceed across multiple domains of functioning?
  (e.g., sequence of decline across domains: terminal cascade)
- Does terminal decline in well-being extend to younger age groups?