

Does the death of a spouse increase subjective well-being: An assessment in a population of adults with neurological illness

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Abstract

Background: Studies suggest that people can experience personal growth following major life challenges. We explored the hypothesis that widowed individuals would benefit from adversarial or post-traumatic growth and experience greater levels of happiness than other marital groups.

Methods: Fifty-four patients suffering from neurological illness were analyzed to clarify whether marital status was a determinant factor in subjective well-being (SWB).

Results: After controlling for estimated decline from premorbid intellectual ability, level of physical activity, age, and ethnicity, a strong association was noted between marital status and happiness. Widowed subjects experienced greater happiness than married patients. SWB in response to neurological illness was the same for widows and widowers. Only those individuals whose spouse had died experienced greater levels of happiness in the face of a lifestyle-threatening condition.

Conclusions: Loss of a spouse can cause the widowed partner to develop adaptive strategies to cope with future lifestyle stressors.

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Introduction

Major advances have been made in our understanding of the psychological growth that can emerge from major life crisis and loss [1–3]. ‘Adversarial’ or ‘post-traumatic growth’ are terms describing the notion that positive change can occur when individuals are confronted by major lifestyle challenge or significant loss [4]. The literature suggests that the human spirit is resilient. Being confronted by, and forced to cope with, major lifestyle struggle or adversity, propels an individual to develop new ways of coping and thinking about oneself in relation to the world. For

some, these adaptations can result in a higher level of functioning. Support for the idea of adversarial growth has been demonstrated empirically following rape [5], diagnosis of HIV/AIDS [6], parents’ adjustment to the murder of their children [7], military combat [8, 9], bone marrow transplantation [10], heart attack [11], multiple sclerosis [12], spinal cord injury [13], breast cancer [14], plane crashes and tornadoes [15], as well as following bereavement [16–18].

No uniform pattern of adjustment appears to emerge following bereavement. For some, the distress triggered by loss may last for several years [19, 20]. In

contrast, for others, bereavement can provide a context for adversarial growth [21–25]. The study of adversarial growth, particularly as it relates to the loss of a spouse, is important. It may be the case that after experiencing the death of a loved one the surviving partner may develop adaptive coping strategies which make them less vulnerable to emotional distress from lifestyle threat.

In 2013, we [26] explored the relationship between marital status and psychological resilience in a large sample of chronic pain sufferers. After statistically controlling for pain sensation intensity, age and ethnicity, marital status was uniquely associated with emotional suffering. Subjects who experienced the death of a spouse suffered less frustration, fear, and anger than all of the other groups (i.e. married, divorced, separated, or single). Only those individuals whose spouse died experienced less emotional turmoil in the face of chronic pain. The emotional response to pain was the same for (female) widows and (male) widowers. We suggested that the death of a spouse may confer to the individual some form of “emotional inoculation” against future lifestyle threat.

The current study attempts to replicate and extend the findings of Wade et al. [26] to examine whether the psychological benefit associated with spousal loss noted in a chronic pain population would generalize to patients suffering from neurological disorders. Secondly, whereas Wade et al. [26] studied emotional resilience (i.e. severity of negative emotional states) in response to chronic pain, here we examine the relationship between marital status and the positive emotional state of happiness using a contemporary measure of subjective well-being (SWB).

The clinical term for happiness is SWB, which refers to the degree to which an individual views their life as desirable and/or proceeding well [27]. Accounts of subjective well-being thus provide a summary measure of quality of life. Higher levels of happiness are associated with better social relationships, increased productivity at work, better health and greater longevity [28]. SWB is often conceptualized as being composed of two dimensions: hedonia and eudaimonia [29]. Hedonic well-being is an assessment of life satisfaction and affective components [30]. The eudaimonic component of well-being focuses on perceptions of psychological functioning and self-

fulfillment. The latter component is related to personal growth, sense of life purpose, and perception of autonomy [31].

Keyes [32] noted that people are embedded in social communities and face social challenges. Following this line of reasoning Baumeister and Leary [33] suggest that a comprehensive measure of happiness must, in addition to hedonic and eudaimonic characteristics, include an individual’s perception of their social needs and interpersonal functioning. While there are several measures used to assess happiness such as the Satisfaction With Life Scale (SWLS) [34], Subjective Happiness Scale (SHS) [35], Flourishing Scale (FS) [36], the Mental Health Continuum-Short Form (MHC-SF) [37], and the Warwick–Edinburg Mental Well-Being Scale (WEMWBS) [38], only the Pemberton Happiness Index (PHI) [39] provides a comprehensive assessment of the psychological, social, and experienced dimensions of happiness.

Not unexpectedly, it has been noted that happiness correlates inversely with depression. Indeed, several studies [40–43] have proposed that these two constructs represent polar opposites on a single continuum. Given that happiness and emotional suffering are inversely correlated, we did not statistically control for emotional suffering in the present study. As levels of SWB may differ by age [44–45] and ethnicity [46] we controlled for these demographic variables, along with current level of physical activity and severity of cognitive decline in examining the relationship between happiness and marital status in individuals with neurological disorders. Our hypothesis was that widowed individuals would benefit from adversarial growth and experience greater levels of happiness than the other marital groups.

Materials and methods

The Institutional Review Board at Virginia Commonwealth University approved the study protocol.

Participants

Participants were patients at a southeastern United States university medical center outpatient psychological assessment center. Study subjects were consecutive referrals for outpatient neuropsychological assessment by two of authors (JB and CM). This project represents a retrospective chart review of patient’s seen by one of the authors (JBW) between 2014 and 2015. During this time period a total of 54 patients were evaluated, ranging in age from 16 to 73 years. As can be seen in Table 1 the majority of the subjects were Caucasian (76%), married (53%) women (60%). Subjects completed an average of 14 years of education. The most frequent neurological diagnosis was cerebrovascular disease (N = 26).

Table 1. Demographic and neurological characteristics of the participants

Age, mean +/- SD	57.28 (16.71)
Gender, M = men, F = female (%)	22 M (40), 32 F (60)
Ethnicity, C = Caucasian, AA = African American, A = Asian American n (%)	42 C (76.4), 10 AA (18.2), 2 A(3.6)
Education, years +/- SD	14.22 (3.18)
Marital Status, S = single, M = married, D = divorced, W = widow n (%)	12 S (21.8), 29 M (53.7), D 6 (10.9), W 7 (12.7)
Neurological Illness n (%)	
Cerebral Vascular Disease	26 (48)
Hypoxia	7 (12)
Seizures	6 (11)
Multiple Sclerosis	6 (11)
Alzheimer’s type dementia	3 (5)
Traumatic Brain Injury	3 (5)
Parkinson’s Disease	2 (3)

Measures

The Pemberton Happiness Index (PHI) is an integrative measure of psychological, social, and experienced well-being, with 11 items relating to different domains of remembered well-being (i.e.

general, eudaimonic, hedonic, and social well-being), and 10 items related to experienced well-being. It has been validated in seven languages within their respective countries [39]. In each case a subject reads a sentence and then, using a Likert-type response (where zero is ‘totally disagree’ and 10 is ‘totally agree’), indicates the extent to which he/she agrees with each statement. As the PHI items assessing experienced well-being require the subject to reflect upon events the day before the assessment, Hervas and Vasquez [39] point out that subject characteristics such as short-term memory ability may confound the interpretation of this PHI section. Therefore, given that we assessed individuals with neurological disorders, we did not include the experienced well-being items in the PHI index.

As part of the neuropsychological evaluation, each subject was administered a measure of social support derived from the original 40-item Interpersonal Support Evaluation List (ISEL) scale [47]. This scale contains four theoretically derived subscales thought to measure distinct dimensions of perceived social support (i.e. tangible, belonging, appraisal, and self-esteem). Factor analysis of the ISEL provided evidence for a four-factor model, with moderate intercorrelations noted between the four subscales [48]. A short form of the ISEL (ISEL-SF) [49] was used in the current study, which consists of 16 true/false items drawn from the full 40-item ISEL scale. Items selected were those with the highest factor loadings within each of the four subscales from the original analysis of the full ISEL instrument [48]. Confirmatory factor analysis replicated the subscale structure of the ISEL-SF. Correlations with another established measure of social support (the Lubben Social Support Scale) provided construct validity for the ISEL-SF [49]. With respect to reliability, the internal consistency estimates obtained by Payne et al. [49] suggest that test items are highly interrelated for the overall scale, and moderately so for subscales. ISEL-SF scores can range from 0–16, with higher scores indicating greater perceived social support.

The Short Questionnaire to Assess Health-Enhancing Physical Activity (SQUASH) [50] developed by the Dutch National Institute of Public Health and the Environment, was also administered. This measure contains questions related to occupation, leisure time, household, transportation means, and other domains.

Activities are given an intensity score (ranging from 1–9). The total number of minutes engaged in each activity is calculated by multiplying frequency (days/week) by duration (minutes/day). Activity scores for separate questions were calculated by multiplying total minutes of activity by the intensity score. The total activity score is calculated by taking the sum of the activity scores for each separate question. The higher the SQUASH score, the greater the level/duration of weekly physical activity. The reliability of the SQUASH in the Wendel-Vos et al. study [50] was 0.58 (95% CI 0.36–0.74). De Hollander et al. [51] used the Actiheart device (CamNTEch, Cambridge, UK) to examine the validity of the SQUASH. The Actiheart measures daily life activities, calculates energy expenditure, and is able to make a distinction between the intensity of individuals' activities [52, 53]. These data support the SQUASH as a reliable and valid measure of physical activity level in an adult population.

The Wechsler Abbreviated Scale of Intelligence–2nd Edition (WASI-II) [54] was administered to assess intellectual ability. The four subtests selected for the WASI-II were those with the highest factor loadings on general intelligence (g). ‘Vocabulary and Similarities’ form the verbal comprehension index, while ‘Block Design and Matrix Reasoning’ form the perceptual reasoning index. Reliability coefficients for subtests' internal consistency, as measured by a split-half method, ranged from 0.90–0.92. The average reliability coefficients were also excellent for the Full Scale Intelligence Quotient-4 (FSIQ-4), and FSIQ-2 composites, being 0.97 and 0.94, respectively. Test/retest reliability is good (0.83) to excellent (0.94) for the subtests, and excellent (0.90–0.96) for the composite scores. The WASI-II is intended to estimate intelligence close to a Wechsler Adult Intelligence Scale–4th edition (WAIS-IV) [55] FSIQ. WASI-II indices are correlated with scores on the original WASI [56], Wechsler Intelligence Scale for Children–4th edition (WISC-IV) [57], and the WAIS-IV (0.71–0.92).

The Wechsler Test of Adult Reading (WTAR) [58] was used to estimate premorbid or characteristic intellectual ability. This instrument was developed and co-normed with the Wechsler Adult Intelligence Scale–3rd edition (WAIS-III) [59], and the Wechsler Memory Scale–3rd edition (WMS-III) [60]. Another

advantage of the WTAR is its ability to estimate premorbid intelligence from demographic variables alone (i.e. age, highest educational level attained, gender, and ethnicity). Studies examining the validity of this estimate demonstrate improvement over that of the WTAR reading recognition subtest [58]. In the present study we subtracted a subject's WASI-II Full Scale score from their demographic-based WTAR predicted score in estimating cognitive decline due to neurological illness.

Data analysis

To determine whether marital status is a factor in the SWB of individuals with neurological illness, Analysis of Covariance (ANCOVA) analysis was conducted using Statistical Package for the Social Sciences (SPSS version 23; IBM). In this general linear modeling procedure we statistically controlled for level of physical activity, estimated decline from premorbid intellectual ability, and demographic variables (age and ethnicity).

Results

ANCOVA revealed that after controlling for physical functioning (activity level), estimated decline from premorbid intellectual ability, age, and ethnicity, marital status was significantly related to happiness in individuals with neurological disorders ($F = 4.322$, $df = 3$, $P = 0.009$). Post hoc pairwise analyses, corrected using Tukey's honest significant difference test to account for multiple comparisons, were used to identify differences in SWB between the marital groups. Our hypothesis that widowed individuals would benefit from adversarial growth and thereby experience greater levels of happiness compared to the other marital groups was partially supported. As seen in Table 2, widows experienced significantly higher levels of happiness compared to married subjects ($\bar{x} = 19.51$, $P = 0.035$). No other marital group contrasts reached statistical significance.

To determine whether the neurological groups differed in their levels of happiness, ‘neurological diagnosis’ was included as an ANCOVA covariate (along with level of cognitive decline, physical activity level, age, and ethnicity). The main effect for

neurological diagnosis ($F = 1.108$, $df = 7$, $P = 0.384$) and the interaction of neurological diagnosis with marital status ($F = 1.713$, $df = 9$, $P = 0.129$) were not significant.

To clarify whether widows and widowers differed in their happiness levels, ‘sex’ was included as an ANCOVA covariate (along with level of cognitive decline, physical activity level, age, and ethnicity). The main effect for sex ($F = 0.073$, $df = 1$, $P = 0.788$) and the interaction of sex with marital status ($F = 0.793$, $df = 3$, $P = 0.505$) were not significant. Finally, ANCOVA was conducted to clarify whether the difference in happiness seen between marital groups was a function of interpersonal support, as measured by the ISEL-SF. After controlling for level of cognitive decline, physical activity level, age, and ethnicity, the marital groups did not differ significantly in terms of the amount of social support ($F = 1.900$, $df = 3$, $P = 0.143$).

Discussion

The main finding from our study was that the prior experience of losing a spouse tended to be associated with higher levels of happiness in our sample of patients suffering from neurological disorders. Specifically, those subjects whose spouse had died experienced greater levels of subjective well-being (SWB) than married individuals coping with their medical condition. This finding was apparent in both widows and widowers. Neurological groups did not differ in their level of happiness; for example, widows/widowers suffering with cerebrovascular disease, Alzheimer’s disease, or seizures, showed no difference in SWB. The association between marital status and level of happiness was not attributable to perceived social support, which did not differ across the marital groups. Therefore, the greater SWB experienced by widows/widowers was not because they enjoyed greater levels of family or community support. Similarly, this finding was not accounted for by physical functioning as measured by activity level, nor by extent of cognitive decline. Therefore, the higher levels of happiness experienced by widows/widowers does not appear to be a function of less lifestyle disruption, or less neurobehavioral decline, relative to other marital groups. The current results are consistent with the Wade et al. [26] study

in which the only significant marital group contrast was between the widows and the other marital groups.

It is an ancient idea that positive change can occur in people confronted by suffering or loss [3]. However, there is still relatively little research on, or consensus on the definition of, post-traumatic growth after bereavement [25]. Qualitative studies of the potential positive benefits associated with loss suggest that grieving individuals may develop greater wisdom, life changing perspectives, and maturity [18]; as well as improvements in family relationships and increased levels of compassion [61].

A proposed model of post-traumatic growth [62, 63] suggests the surviving spouse may experience adversarial growth in five domains: 1) while the loss of a spouse can lead to feelings of vulnerability, it can also result in feelings of personal strength and self-confidence. It is as if being confronted by, and forced to deal with, one of life’s greatest challenges provides the individual with proof that they possess personal strength in the face of adversity [4]. 2) Post-traumatic growth may be experienced as an increased sense of closeness to, or compassion for others, perhaps particularly with those who have also experienced the loss of a loved one.

Table 2. Post hoc pairwise comparisons between Pemberton Happiness Index and marital groups

	Widow vs. single	Divorced vs. single	Single vs. married
<i>Mean difference</i>	16.071	13.500	3.879
<i>Standard error</i>	8.042	8.454	5.804
<i>Significance</i>	0.202	0.390	0.908
	Widow vs. married	Divorced vs. married	
<i>Mean difference</i>	19.951	17.379	
<i>Standard error</i>	7.121	7.584	
<i>Significance</i>	0.035*	0.114	
	Widow vs. divorced		
<i>Mean difference</i>	2.571		
<i>Standard Error</i>	9.407		
<i>Significance</i>	0.993		

* $p \leq 0.05$

3) It may initially be daunting to for the surviving partner to assume responsibilities formerly handled by the deceased, but it may awaken the surviving partner to new lifestyle possibilities and a sense of empowerment. 4) Being confronted by death on a personal level may serve as a reminder of the surviving spouse's own mortality, resulting in an increased appreciation for each new day. 5) As exemplified in Calhoun et al.'s [64] model of post-traumatic growth, the surviving spouse may begin to entertain existential questions of a spiritual or religious nature that encourages exploration of life's meaning and purpose [20].

Studies of bereaved parents [65] and caregivers of persons suffering with HIV/AIDS [66] provide support for the notion that spiritual and existential development reflects post-traumatic growth. Cait [67] suggests that some individuals have a desire to maintain a connection with the deceased, which leads them to emphasize spiritual beliefs and contributes to their adversarial growth. Similarly, using structural equation modeling, Cadell et al. [22] found that quality of social support and degree of spiritual focus, were important determinants in post-traumatic growth for bereaved HIV/AIDS caregivers.

There is no consensus on the factors predisposing post-traumatic growth. In a study of individuals suffering from complicated grief, Wagner et al. [25] found that general level of psychological functioning, more so than any other personality factor, was associated with post-traumatic growth. Similarly, in a sample of bereaved parents whose children died before the age of 25, Engelkemeyer and Marwit [23] found the surviving parents' self-worth to be an important predictor of adversarial growth. The data are, however, conflicting in terms of type and intensity of initial psychological distress and its potential for post-traumatic growth. Calhoun and Tedeschi [68] suggest that greater levels of distress may serve to enable the bereaved individual to challenge their assumptions of the world; forcing them not only to deal with the distress resulting from the death, but to also examine how they assume the world to work. This challenge to a person's core belief system is thought to set the stage for adversarial growth. Deaths that do not lead to significant re-examination of core beliefs may not result in significant post-traumatic growth [64]. In contrast,

others suggest that significant distress inhibits [23], or is perhaps unrelated to [69] adversarial growth.

Only the contrast between widowed and married subjects reached statistical significance. Consistent with theories of post-traumatic growth, the death of a spouse, rather than divorce, may be more threatening to an individual's core belief system, and therefore more likely to result in adversarial growth. Losing a spouse to illness or injury may have a different impact on an individual than divorce. For example, divorced individuals may differ from widows in that they were likely to have had more control over events and the change in their marital status.

The fact that the widows/widowers in our sample were suffering from neurological illness, yet had higher levels of happiness than participants from other marital groups, suggests that death of a loved one may challenge how the surviving spouse sees themselves, and views the world. These challenges to a person's belief system may foster the development of new coping strategies, making an individual less vulnerable to stress associated with neurological illness and lifestyle change. Our finding is consistent with that of Wade et al. [26]. In the latter study, compared with subjects in other marital categories, only widows suffered significantly less frustration, fear, and anger. They also experienced less depression and anxiety than divorced individuals. Therefore, consistent with the Wade et al. [26] study, while divorced subjects in the present study experienced the loss of a spousal relationship, only the widowed subjects experienced greater SWB.

The findings of this study have important societal implications. It is understandable that a surviving spouse may question their ability to "go it alone". The results of this study, along with the Wade et al. [26] study, provide encouragement for the surviving spouse regarding their ability to cope with future lifestyle threats. Specifically, after experiencing the trauma of loss, the surviving partner may develop adversarial growth. Being confronted by, and forced to adapt to, one of life's greatest losses may protect against negative emotional states in the face of lifestyle threat. The resilience of human spirit and post-traumatic growth is not merely a product of age-related wisdom, but also an interaction with life's circumstances.

There are a number of limitations to the current study. We did not include measures assessing the quality of the marital relationship, which has been suggested to impact on a patient's ability to cope with rheumatoid arthritis [70], thus this should be examined in future studies. Similarly, other factors contributing to suffering within the family system (such as financial strain and psychiatric illness) should be assessed. While SWB is thought to be a powerful indicator of overall psychological health, we did not include measures assessing changes in spirituality, or an individual's core belief system, which have been noted as predictors of post-traumatic growth [71]. Also, in the present study we did not examine the cause of the spouse's death. For example, a natural death at the end of life is thought to be easier to emotionally accept [72]. Tedeschi and Calhoun [73] suggest that unexpected deaths, such as the death of a young child, are less "natural," and may have greater potential for post-traumatic growth. The relatively small sample size in this study may have limited our statistical power to detect smaller effects. To clarify potential causation, a longitudinal design using a large, medically ill population, with measures of an individual's core belief system and spiritual well-being will be necessary. Despite these limitations, our results confirm and extend the findings of Wade et al. [26] indicating that loss of a spouse may result in the development of adaptive strategies to cope with future lifestyle stressors.

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