

REPORT



## Unique associations of eudaimonic and hedonic wellbeing with psychosocial adjustment in breast cancer survivors

Patricia I. Moreno, PhD<sup>a</sup> , Larissa N. Dooley, PhD<sup>b</sup>, and  
Julienne E. Bower, PhD<sup>b,c,d</sup>

<sup>a</sup>Department of Medical Social Sciences, Feinberg School of Medicine, Northwestern University, Chicago, Illinois, USA; <sup>b</sup>Department of Psychology, University of California, Los Angeles (UCLA), Los Angeles, California, USA; <sup>c</sup>Department of Psychiatry & Biobehavioral Sciences, University of California, Los Angeles, California, USA; <sup>d</sup>Cousins Center for Psychoneuroimmunology, University of California, Los Angeles, California, USA

### ABSTRACT

**Purpose:** Eudaimonic wellbeing (e.g., meaning, purpose in life) and hedonic wellbeing (e.g., happiness, life satisfaction) are related but conceptually distinct facets of wellbeing. Eudaimonic wellbeing is highly underexplored in cancer research despite its relevance to important existential concerns faced by cancer survivors. Therefore, this study examined the unique associations of eudaimonic and hedonic wellbeing with adjustment in breast cancer survivors.

**Methods:** Women diagnosed with early-stage breast cancer within two years ( $N=64$ ) were recruited through the UCLA Tumor Registry and completed self-report questionnaires (Mental Health Continuum – Short Form Scale, Posttraumatic Growth Inventory, Social Provisions Scale, Quality of Life in Adult Cancer Survivors Scale, Center for Epidemiological Studies – Depression Scale, Pittsburgh Sleep Quality Index, Fatigue Symptom Inventory, Perceived Stress Scale).

**Findings:** Controlling for their shared variance and covariates, eudaimonic wellbeing was uniquely associated with greater posttraumatic growth ( $\beta=0.42$ ,  $p=.026$ ,  $R^2=.07$ ), more reliable social support ( $\beta=0.50$ ,  $p=.010$ ,  $R^2=.09$ ), and marginally lower fear of recurrence ( $\beta=-0.40$ ,  $p=.063$ ,  $R^2=.06$ ) while hedonic wellbeing was uniquely associated with lower sleep disturbance ( $\beta=-0.56$ ,  $p=.004$ ,  $R^2=.12$ ), fatigue ( $\beta=-0.53$ ,  $p=.003$ ,  $R^2=.11$ ), and depressive symptoms ( $\beta=-0.59$ ,  $p<.001$ ,  $R^2=.14$ ).

**Conclusions:** Findings suggest eudaimonic wellbeing may confer quality of life benefits beyond symptom reduction in breast cancer survivors, while hedonic wellbeing is primarily associated with fewer behavioral symptoms.

### KEYWORDS

adjustment; breast cancer; eudaimonic; hedonic; survivorship; wellbeing

## Introduction

Eudaimonic wellbeing is defined as the experience of feelings that accompany personal fulfillment, such as meaning, purpose in life, and mastery.<sup>1</sup> Hedonic wellbeing, on the other hand, is defined as the presence of positively valenced feelings that are pleasurable, such as satisfaction with life and positive affective states like happiness.<sup>2,3</sup> Eudaimonic and hedonic wellbeing are conceptually distinct and have been shown to represent related, but separate facets of wellbeing in factor analyses.<sup>4</sup> Eudaimonic and hedonic wellbeing also demonstrate construct specificity through their differential associations with psychosocial and biological variables when controlling for their shared variance.<sup>5,6</sup> Thus, it is possible that eudaimonic wellbeing may be associated with unique facets of psychosocial adjustment in cancer survivors when controlling for its shared variance with hedonic wellbeing.

Positive affect, a primary component of hedonic wellbeing, has been shown to be associated with improved adjustment in cancer survivors, including greater physical functioning and lower depressive symptoms, anxiety, fatigue, and somatic symptoms.<sup>7,8</sup> However, despite the fact that eudaimonic wellbeing is relevant to important existential concerns experienced by cancer survivors, such as loss of meaning and purpose,<sup>9</sup> it is highly underexplored in cancer survivorship research and to our knowledge no studies have examined the unique associations of eudaimonic and hedonic wellbeing with psychosocial adjustment in cancer survivors. Relative to hedonic wellbeing, eudaimonic wellbeing is more likely to be experienced concurrently with distress, such as anxiety and depressive symptoms, and in the midst of negative life events like cancer.<sup>10</sup> This is of particular importance in the cancer context as the disease and treatment often evoke uncertainty and distress in survivors that are normative and expected responses to significant challenges. Therefore, the aim of this study was to examine the unique associations of eudaimonic and hedonic wellbeing with adjustment in early-stage breast cancer survivors. We were primarily interested in whether these facets of wellbeing demonstrated differential associations with markers of adjustment, including social support, cancer-specific posttraumatic growth, fear of recurrence, depressive symptoms, fatigue, sleep disturbance, and perceived stress, when controlling for their shared variance.

## Method

### Participants

Potential participants were identified using the UCLA Tumor Registry, which is part of the California Cancer Registry System. Eligibility criteria included diagnosis with early-stage breast cancer (stages I–III) within the

past two years, resection of primary tumor at UCLA, and English proficiency. A total of 544 women were identified and sent mailings inviting them to participate in the study; 110 women contacted our research team to express interest in participating and were screened over the phone for eligibility. Individuals were excluded if they had a previous diagnosis of breast cancer or had metastatic disease. A total of 73 women were eligible and 64 provided questionnaire data.

### **Procedures**

Data were collected as part of a larger project on stress, inflammation, and tumor characteristics in breast cancer survivors. Participants completed a set of self-reported questionnaires and a lifetime stress exposure interview (not reported here). Data were collected between July 2014 and November 2014. All participants provided informed consent. Study procedures were approved by the University of California, Los Angeles (UCLA) Institutional Review Board and were in accordance with the ethical standards of the Institutional Review Board and the 1964 Helsinki declaration and its later amendments.

### **Measures**

#### ***Eudaimonic and hedonic wellbeing***

The Mental Health Continuum – Short Form Scale (MHC-SF)<sup>11</sup> was used to assess eudaimonic and hedonic wellbeing during the past month (0 = Never to 5 = Every Day). The eudaimonic psychological wellbeing subscale is comprised of six items (e.g., “your life has a sense of direction or meaning to it,” “you are good at managing the responsibilities of your life,” “you are confident to think or express your own ideas and opinions”) and the hedonic subscale is comprised of three items (“happy,” “satisfied with life,” “interested in life”). This scale demonstrated excellent internal consistency in this sample (eudaimonic subscale:  $\alpha = 0.90$ ; hedonic subscale:  $\alpha = 0.87$ ).

#### ***Adjustment***

Perceived stress, depressive symptoms, sleep disturbance, and fatigue during the past week were assessed using the Perceived Stress Scale (PSS),<sup>12</sup> Center for Epidemiological Studies – Depression Scale (CES-D),<sup>13</sup> Pittsburgh Sleep Quality Index (PSQI),<sup>14</sup> and Fatigue Symptom Inventory (FSI),<sup>15</sup> respectively. Fear of cancer recurrence during the past month was assessed with the fear of recurrence subscale of the Quality of Life in Adult Cancer Survivors Scale (QLACS).<sup>16</sup> Cancer-specific posttraumatic growth was assessed using the Posttraumatic Growth Inventory (PTGI).<sup>17</sup> Reliability and availability of social support was assessed with the reliable

alliance subscale<sup>a</sup> of the Social Provisions Scale (SPS).<sup>18</sup> These scales demonstrated good to excellent internal consistency in this sample (PSS:  $\alpha = 0.91$ ; CES-D:  $\alpha = 0.94$ ; PSQI:  $\alpha = 0.76$ ; FSI:  $\alpha = 0.85$ ; QLACS:  $\alpha = 0.89$ ; PTGI:  $\alpha = 0.97$ ; SPS:  $\alpha = 0.90$ ).

### ***Demographic and clinical characteristics***

Information on age, race/ethnicity, relationship status, educational background, and socioeconomic status was obtained using a self-reported questionnaire. Date and stage of breast cancer diagnosis was collected from patients' medical charts.

### ***Statistical analyses***

Analyses were conducted using IBM SPSS Statistics (version 24). Pearson correlations were conducted in order to examine the bivariate associations of eudaimonic and hedonic wellbeing with measures of adjustment. In order to examine the unique associations of eudaimonic and hedonic wellbeing with adjustment, linear regression models were conducted simultaneously regressing covariates (age, time since diagnosis, cancer stage) and both facets of wellbeing on each measure of adjustment. When a facet of wellbeing was significantly associated with a measure of adjustment in a regression model, its effect size was calculated by change in  $R^2$  corresponding to its addition to the model after controlling for covariates and the other facet of wellbeing (e.g., the change in  $R^2$  corresponding to the addition of eudaimonic wellbeing to the model [block 2] after controlling for hedonic wellbeing and other covariates [block 1] or, conversely, the change in  $R^2$  corresponding to the addition of hedonic wellbeing to the model [block 2] after controlling for eudaimonic wellbeing and other covariates [block 1]).  $R^2$  (also known as coefficient of determination) specifies the proportion of variance in the outcome that is explained by a predictor.

## **Results**

Sample characteristics and descriptive statistics are shown in [Tables 1 and 2](#), respectively. Eudaimonic and hedonic wellbeing were positively correlated ( $r = .76$ ,  $p < .001$ ). Bivariate correlations revealed similar overall associations between eudaimonic and hedonic wellbeing with measures of adjustment ([Table 3](#)). However, regression analyses examining the unique associations of eudaimonic and hedonic wellbeing with adjustment when controlling for their shared variance revealed a different pattern of results ([Table 4](#)). When controlling for hedonic wellbeing and covariates (i.e., age, cancer stage, and time since diagnosis), eudaimonic wellbeing was uniquely

**Table 1.** Sample characteristics.

	(N = 64)
Age, mean (SD)	59.71 (11.68)
Years since diagnosis, mean (SD)	1.56 (.57)
Race, % (n)	
White	76.56 (49)
Black	1.56 (1)
Asian	12.50 (8)
Other	9.38 (6)
Ethnicity, % (n)	
Non-Hispanic/Latino	93.75 (60)
Hispanic/Latino	6.25 (4)
Household income, % (n)	
Less than \$60,000	28.13 (18)
\$60,000–\$100,000	29.69 (19)
More than \$100,000	37.50 (24)
Missing	4.68 (3)
Educational history, % (n)	
Less than high school	1.56 (1)
High school graduate	3.13 (2)
Some college/vocational training	18.75 (12)
College degree	43.75 (28)
Graduate or professional degree	32.81 (21)
Relationship status, % (n)	
Single	15.62 (10)
Married or living with partner	62.50 (40)
Separated or divorced	10.94 (7)
Widowed	10.94 (7)
Stage, % (n)	
IA/B	45.31 (29)
IIA/B	40.63 (26)
IIIA	6.25 (4)
Missing	7.81 (5)

**Table 2.** Descriptives, mean (SD).

Eudaimonic wellbeing (MHC-SF)	3.69 (1.07)
Hedonic wellbeing (MHC-SF)	3.40 (1.12)
Perceived stress (PSS)	15.58 (7.14)
Depressive symptoms (CES-D)	14.75 (12.57)
Sleep disturbance (PSQI)	8.25 (4.22)
Fatigue (FSI)	4.34 (1.88)
Fear of recurrence (QLACS)	9.61 (5.03)
Reliable social support (SPS)	14.89 (1.71)
Cancer-specific posttraumatic growth (PTGI)	43.62 (26.87)

MHC-SF = Mental Health Continuum-Short Form; PSS = Perceived Stress Scale; CES-D = Center for Epidemiological Studies-Depression Scale; PSQI = Pittsburgh Sleep Quality Index; FSI = Fatigue Symptom Inventory; QLACS = Quality of Life in Adult Cancer Survivors Scale; PTGI = Posttraumatic Growth Inventory.

associated with more reliable social support ( $\beta = 0.50$ ,  $p = .010$ ,  $R^2 = .09$ ),<sup>b</sup> greater cancer-specific posttraumatic growth ( $\beta = 0.42$ ,  $p = .026$ ,  $R^2 = .07$ ), and marginally lower fear of recurrence ( $\beta = -0.40$ ,  $p = .063$ ,  $R^2 = .06$ ) – accounting for 6% to 9% of the variance in these outcomes. Eudaimonic wellbeing was not uniquely associated with depressive symptoms, sleep disturbance, or fatigue ( $p$ 's > .20) when controlling for hedonic wellbeing and covariates. When controlling for eudaimonic wellbeing and covariates, hedonic wellbeing was uniquely associated with lower depressive symptoms

**Table 3.** Bivariate correlations,  $r$  ( $p$ -value).

	Eudaimonic wellbeing	Hedonic wellbeing
Perceived stress	-.63 (<.001)	-.58 (<.001)
Depressive symptoms	-.67 (<.001)	-.70 (<.001)
Sleep disturbance	-.25 (.048)	-.42 (.001)
Fatigue	-.49 (<.001)	-.55 (<.001)
Fear of recurrence	-.24 (.059)	-.08 (.509)
Reliable social support	.60 (<.001)	.50 (<.001)
Cancer-specific posttraumatic growth	.28 (.028)	.17 (.188)

**Table 4.** Regression analyses,  $\beta$  ( $p$ -value),  $R^2$ .

	Eudaimonic wellbeing	Hedonic wellbeing
Perceived stress	-.32 (.054), $R^2=.04$	-.34 (.037), $R^2=.05$
Depressive symptoms	-.16 (.270), $R^2=.01$	-.59 (<.001), $R^2=.14$
Sleep disturbance	.22 (.266), $R^2=.02$	-.56 (.004), $R^2=.12$
Fatigue	-.05 (.786), $R^2<.01$	-.53 (.003), $R^2=.11$
Fear of recurrence	-.40 (.063), $R^2=.06$	.21 (.311), $R^2=.02$
Reliable social support	.50 (.010), $R^2=.09$	.08 (.666), $R^2<.01$
Cancer-specific posttraumatic growth	.42 (.026), $R^2=.07$	-.13 (.469), $R^2=.01$

All analyses controlled for shared variance between eudaimonic and hedonic wellbeing and covariates (i.e., age, time since diagnosis, and cancer stage).

( $\beta = -0.59$ ,  $p < .001$ ,  $R^2 = .14$ ), sleep disturbance ( $\beta = -0.56$ ,  $p = .004$ ,  $R^2 = .12$ ), and fatigue ( $\beta = -0.53$ ,  $p = .003$ ,  $R^2 = .11$ ) – accounting for 11% to 14% of the variance in these outcomes. Hedonic wellbeing was not uniquely associated with cancer-specific posttraumatic growth, reliable social support, or fear of recurrence ( $p$ 's  $> .30$ ) when controlling for eudaimonic wellbeing and covariates. Both eudaimonic and hedonic wellbeing were similarly associated with lower perceived stress when controlling for shared variance and covariates ( $\beta = -0.32$ ,  $p = .054$ ,  $R^2 = .04$  for eudaimonic;  $\beta = -0.34$ ,  $p = .037$ ,  $R^2 = .05$  for hedonic) – accounting for 4% and 5% of the variance in this outcome, respectively.

## Discussion

The aim of this study was to examine the unique associations of eudaimonic and hedonic wellbeing with adjustment in early-stage breast cancer survivors. Although these related facets of wellbeing demonstrated similar overall bivariate associations with markers of adjustment, analyses controlling for their shared variance demonstrated a different pattern of results. Eudaimonic wellbeing was uniquely associated with more reliable social support, greater cancer-specific posttraumatic growth, and marginally lower fear of recurrence, while hedonic wellbeing was uniquely associated with lower depressive symptoms, sleep disturbance, and fatigue. Both eudaimonic and hedonic wellbeing were associated with lower perceived stress when controlling for their shared variance. These findings build upon previous research that has demonstrated differential associations of eudaimonic and hedonic wellbeing<sup>5,6</sup> and extends this work to cancer survivors.

Findings suggest that, although both facets of wellbeing are associated with lower levels of perceived stress, eudaimonic wellbeing may confer quality of life benefits beyond symptom reduction in cancer survivors, while hedonic wellbeing is primarily associated with fewer behavioral symptoms. This is consistent with previous research that has documented the relationship of positive affect with lower depressive symptoms, fatigue, and general somatic symptoms in cancer survivors.<sup>7,8</sup> However, our findings suggest that when controlling for the shared variance between eudaimonic and hedonic wellbeing, eudaimonic wellbeing is not defined by the mere absence of these behavioral symptoms (i.e., depressive symptoms, fatigue, and sleep disturbance).

### ***Clinical implications***

Given that eudaimonic wellbeing (i.e., feelings that accompany personal fulfillment, such as meaning, purpose in life, and mastery) more flexibly allows for the co-occurrence of normative distress<sup>10</sup> and addresses salient existential concerns during the cancer experience,<sup>9</sup> targeting eudaimonic wellbeing through meaning-focused interventions, such as Acceptance and Commitment Therapy (ACT),<sup>19</sup> may be a viable approach to promoting greater quality of life and overall wellbeing in cancer survivors. ACT, which does not aim to challenge or change distressing thoughts or emotional responses to adverse life events but rather focuses on promoting meaning and purpose in life through acceptance, mindfulness, and engagement in values-based activities, may be particularly well-suited. Indeed, preliminary research demonstrates that ACT decreases fear of recurrence and increases meaning and sense of life comprehensibility and manageability in early-stage breast cancer survivors.<sup>20</sup>

### ***Study limitations and future research***

Despite previous research that demonstrates that eudaimonic and hedonic wellbeing have unique associations with psychosocial and biological variables when controlling for their shared variance, to our knowledge this is the first study to extend this work to cancer survivors and examine their unique associations with important markers of adjustment, including fear of recurrence, depressive symptoms, fatigue, sleep disturbance, posttraumatic growth, and social support. Nevertheless, conclusions should be tempered because of study limitations, including the use of a cross-sectional design and small study sample. Future research should employ longitudinal designs in order to examine how the relationships between eudaimonic and hedonic wellbeing with psychosocial adjustment unfold across time. In

particular, a prospective design that establishes temporal precedence between these facets of wellbeing and changes across time in psychosocial adjustment is recommended. Importantly, research is needed to determine the viability of improving adjustment in cancer survivors by targeting eudaimonic wellbeing through interventions like ACT.

## Notes

- a. Other subscales were not included to minimize overlap with social connection, a theorized facet of eudaimonic wellbeing.<sup>1</sup>
- b. Analyses conducted excluding the positive relations with others item (“you had warm and trusting relationships with others”) of the eudaimonic wellbeing subscale demonstrated the same pattern of results ( $\beta = 0.35$ ,  $p = .059$ ,  $R^2 = .05$ ).

## Disclosure statement

The authors have no conflicts of interest to declare.

## Funding

This work was supported by funding from the Breast Cancer Research Foundation awarded to JEB. PIM received support from the National Institute of General Medical Sciences (T32GM084903) and National Cancer Institute (T32CA193193). LND received support from the National Institute on Aging (T32AG033533) and National Institute of General Medical Sciences (T32GM084903). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

## ORCID

Patricia I. Moreno  <http://orcid.org/0000-0002-3083-6461>

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