Goal adjustment influence on psychological well-being following advanced breast cancer diagnosis

Wendy W. T. Lam[1]*, Winnie Yeo[2], Joyce Suen[2], Wing Ming Ho[2], Janice Tsang[3], Inda Soong[4], Tze Kok Yau[4], Ka Yan Wong[5], Wing Kin Sze[6], Alice W. Y. Ng[6], Ava Kwong[7], Dacita Suen[7], Daniel Fong[8], Samuel Ho[9] and Richard Fielding[1]

[1]Centre for Psycho-Oncology Research and Training, School of Public Health, The University of Hong Kong (HKU), Pokfulam, Hong Kong

[2]Department of Clinical Oncology, The Chinese University of Hong Kong, Shatin, Hong Kong

[3]Department of Clinical Oncology, HKU, Pokfulam, Hong Kong

[4]Department of Clinical Oncology, Pamela Youde Nethersole Eastern Hospital, Chai Wan, Hong Kong

[5]Department of Oncology, Princess Margaret Hospital, Toronto, Canada

[6]Department of Clinical Oncology, Tuen Mun Hospital, Tuen Mun, Hong Kong

[7]Department of Surgery, HKU, Pokfulam, Hong Kong

[8]School of Nursing, HKU, Pokfulam, Hong Kong

[9]Department of Applied Social Studies, City University of Hong Kong, Kowloon Tong, Hong Kong

*Correspondence to: Centre for Psycho-Oncology Research and Training, School of Public Health, The University of Hong Kong, Pokfulam, Hong Kong. E-mail: wwtlam@hku.hk

Abstract

Objective: A diagnosis of advanced breast cancer (ABC) challenges a woman's ambitions. This longitudinal study explored (1) if goal adjustment disposition influenced psychological adjustment patterns among women with ABC and (2) if dispositional hope and optimism moderate effects of goal adjustment on psychological adjustment.

Methods: One hundred ninety three out of 225 women with ABC were assessed while they were awaiting/receiving initial chemotherapy, then again at 6 weeks, 3 months, 6 months, and 12 months post-baseline. Goal disengagement, goal reengagement, optimism, hope, and psychological adjustment (anxiety, depression, and positive affect) were assessed at baseline; psychological adjustment was reassessed at each follow-up. Latent growth curve modeling was used to examine the change of psychological adjustment and test the study objectives.

Results: High goal disengagement, low reengagement, and high optimism were associated with lower initial anxiety, while high goal disengagement and optimism predicted a slower rate of change in anxiety. High goal disengagement, reengagement, and optimism were associated with lower initial depression. High goal reengagement, optimism, and hope were associated with initial positive affect scores, while optimism predicted its rate of change. Optimism moderated the effect of goal disengagement on anxiety and depression, whereas hope moderated the effect of goal reengagement on positive affect.

Conclusion: Goal disengagement and reengagement are two relatively independent processes influencing psychological well-being. These findings will help clinicians to tailor specific interventions to help women coping with the diagnosis of ABC. Copyright © 2015 John Wiley & Sons, Ltd.

Advanced breast cancer (ABC) includes metastatic and regional disease spread. While metastatic BC is rarely curable, treatment advances mean many affected women can survive longer [1]. While treatment prolongs these women's lives, disease progression is usually inevitable, and ongoing treatments often impose various threats including side-effects, uncertainty, fear of death, and economic and social burden. In contrast, locally advanced breast cancer is a potentially curable condition, but the prognosis is generally poor with a 5-year survival of less than 50% [2]. Threats of cancer recurrence and aggressive cancer treatment side-effects put enormous emotional demands on affected women. Hence, living with ABC presents a significant emotional and psychological challenge to these patients. Maintaining psychological well-being

for the growing numbers of women with ABC is increasingly important. While several studies assessed psychological well-being in women with ABC [3–6], predictors of psychological well-being among these patients remain poorly understood

Because goals offer people a sense of identity and meaning in life [7], working toward personal goals should benefit psychological well-being. However, when personal goal striving is blocked, or where failure to achieve desired goals implies negative consequences like incompetence, then goals may become detrimental [8]. This may occur when goal attainment ceases to become feasible. For instance, a diagnosis of ABC will challenge many women's goal-directed activities, impairing normal daily routine, career development, and performance of valued

social roles and other roles. One way to maintain psychological well-being in such circumstances is to disengage from commitment to the unattainable goal and to reengage in alternative meaningful goals. Goal disengagement serves two functions: (a) enabling an individual to quit pursuing an unattainable goal, in turn preventing repeated goal failure and its detrimental effects on psychological well-being, and (b) allowing an individual to redeploy resources for pursuing alternative goals for life-enhancement and future development [9]. In contrast, goal reengagement may provide ongoing motivation for living [9] after disengagement. Therefore, disengaging from unattainable goals and re-directing attention and resources to other attainable goals is beneficial [7,8,10]. The ability to disengage from unattainable goals and pursue alternative goals varies across individuals. Individuals with higher ability to disengage from unattainable goals and engage with alternative goals should have better psychological well-being when facing unattainable goals [10]. Previous studies [9–12] indicate that individual differences in goal adjustment tendencies influence psychological well-being, with goal disengagement and goal reengagement appearing to be relatively independent processes. While goal disengagement correlates with both negative and positive affect, goal reengagement correlates mostly with positive affect. Studies rarely examined goal adjustment in adaptation to cancer [13–16].

However, current evidence is primarily based on studies using cross-sectional designs. Only two previous studies on cancer patients adopted a longitudinal approach [15,16], both involving brief 3-month follow-ups. Hence, the long-term effects of goal adjustment on psychological well-being remain sketchy [15]. The present study longitudinally investigated the role of goal adjustment on psychological well-being among women recently diagnosed with ABC. Specially, our primary hypothesis was that the effect of goal disengagement and goal reengagement would influence initial levels and subsequent rates of change of distress over 1 year.

Established markers of resilience, dispositional hope [17,18], and dispositional optimism [19] are commonly beneficial in cancer adaptation. High-hope individuals and optimists more accurately calibrate coping effort to actual demands and thereby often have better adjustment in response to adverse events [17–19]. However, little is known about potential interactions with goal adjustment. Dispositional hope is a bi-faceted construct comprising a sense of successful determination to reach the desired goals together with the perceived ability to always successfully generate a plan to attain them [17]. Hence, the concept of hope embodies explicitly goal-directed dispositions. Studies show dispositional hope consistently benefits psychological adjustment [17]. High-hope people are believed to be flexible thinkers especially when confronting obstacles [17,18], and high-hope individuals

may be more able to abandon an unattainable goal and seek an alternative goal that seems to hold a higher probability of successful attainment [17]. As the concept of hope embodies these explicitly goal-directed dispositions, it is plausible to hypothesize that individuals with high hope may report greater goal disengagement and goal reengagement. Moreover, optimists, those holding persistent positive outcome expectations, find identifying and engaging in new goals easier than do pessimists [19]. Therefore, we hypothesized that optimists would report greater ability to disengage from unattainable goals and to reengage with alternative goals. While these three concepts likely have some overlap, they remain distinct in the literature. Hence, our second and third hypotheses were that dispositional hope and dispositional optimism respectively would moderate the effects of goal adjustment on psychological well-being.

Method

Following ethical committee approval for multi-center studies, Cantonese/Mandarin-speaking Chinese women newly diagnosed with stage III locoregional or stage IV metastatic breast cancer awaiting or receiving initial chemotherapy were recruited consecutively from six of the eight Hong Kong public hospital oncology outpatient clinics from January 2010 to October 2012. Most cancer patients receive oncology care at public hospitals. Exclusion criteria were linguistic or intellectual difficulties and a currently active Axis I psychiatric diagnosis.

At each hospital, eligible patients were identified from clinic lists by clinical oncologists/surgeons and were immediately approached by a trained research assistant while awaiting their consultation. After explaining the study details, written consent was obtained from the potential participants. Participants then completed a standardized baseline face-to-face interview. Face-to-face follow-up assessments were subsequently conducted at 6 weeks, 3 months, 6 months, and 12 months post-baseline at the oncology outpatient clinic. To capture the impacts of chemotherapy, the 6-week post-baseline was chosen as the initial follow-up assessment.

Measures

Psychological well-being was measured as psychological distress and positive affect. Psychological distress was measured by the 14-item Hospital Anxiety and Depression Scales (HADS) [20], comprising two 7-item subscales that measure anxiety and depression. The total scores for each subscale range from 0 to 21, with higher scores indicating greater distress. The Chinese version of the HADS has been validated locally [21]. Both anxiety (Cronbach's α 0.86) and depression (Cronbach's α 0.82) subscales demonstrate good internal consistency.

Positive affect was measured with the 10-item positive affect subscale of the Positive and Negative Affect Schedule (PANAS). The total scores for the positive affect subscale range from 10 to 50. High positive affect is characterized by a state of high energy, full concentration, and pleasurable engagement; low positive affect is characterized by sadness and lethargy. The Chinese version of the PANAS has good reliability, with Cronbach's α 0.90 [22].

Dispositional optimism was measured with the 6-item Chinese revised Life Orientation Test (CLOT-R) [23]. CLOT-R total scores range from 6 to 24, with higher scores indicating greater optimism. The CLOT-R has been validated for use in Hong Kong, and has good reliability, with Cronbach's α 0.71 [23].

Goal adjustment was measured with the 10-item Chinese Goal Adjustment Scale consisting of two subscales [8]: The four-item goal disengagement scale measures ease of reducing effort and relinquishing commitment toward unattainable goals (total scores range from 4 to 16, and higher scores indicate greater ability to relinquish unattainable goals); whereas the goal reengagement scale contains six items measuring the extent of individual reengagement in new goals when facing unattainable goals (total scores range from 6 to 24, and higher scores indicate greater ability to reengage with new goals). Using the current sample to assess construct validity, exploratory factor analysis successfully identified two factors consistent with the original factor structure [8]. The Chinese version of the goal disengagement and reengagement subscales also demonstrated good reliability in the present study, with Cronbach's α 0.77 and 0.89.

Dispositional hope was measured with the 8-item Chinese Hope Scale [24]. The scale contains four 'Will' and four 'Ways' items. The Will items assess motivated state to reach desired goals; Ways items assess the sense that one will be able to successfully generate a plan to attain them [24]. The total scores for each subscale range from 8 to 32, with higher scores indicating high hope. Its construct validity was tested in Hong Kong Chinese cancer patients [24]. The Cronbach's α 0.89 of the Chinese Hope Scale indicated good reliability [24].

Patients' socio-demographic data were collected at baseline interview, whereas clinical data were extracted from patients' medical record using a standard protocol.

All measures were assessed at baseline, with psychological distress and positive affect assessed again at 6 weeks, 3 months, 6 months, and 12 months post-baseline (FU1 to FU4).

Statistical analysis

Standard descriptive analyses assessed sample characteristics. To examine the change of HADS Anxiety and Depression scores, and positive affect scores over the 12 months follow-up, we used a latent growth curve (LGC) analysis within a structural equation framework to estimate intercepts (initial levels) and slopes (rate of change) for anxiety, depression, or positive affect scores [25] (Supplementary 1 in the Supporting Information). Next, two conditional LGC models were tested. The first examined if goal adjustment measured at baseline both associated with baseline outcome scores and predicted their rate of change by including goal disengagement and goal reengagement in the model. Baseline dispositional optimism and hope were also included in the model as covariates. The second model tested if baseline dispositional optimism and hope moderated the effect of baseline goal adjustment on the psychological outcomes at baseline and their rate of change (Supplementary 1 in the Supporting Information).
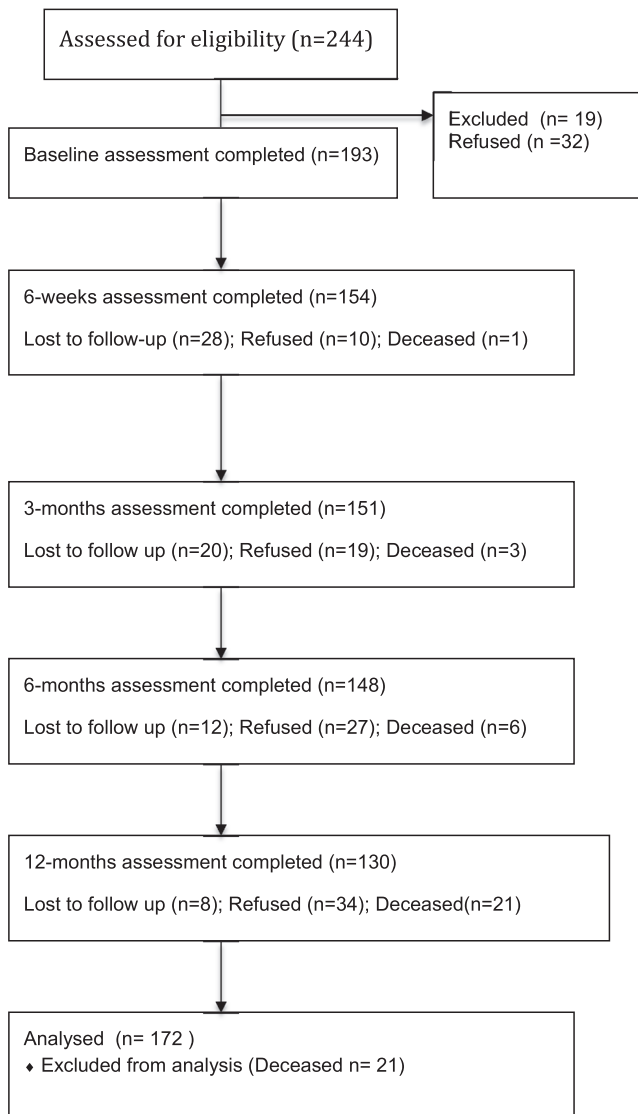
Results

Of the 244 potential participants, 19 were excluded because of linguistic or functional incapacity; 193/225 (86%) eligible women gave informed consent and completed the interview (Figure 1). Women refusing or lost to follow-up did not differ by demographic or medical factors nor in responses given to study baseline measures. A total of 21 (11%) participants died during the study period. Compared with women who survived, those who died during the study more often had recurrent breast cancer (61.9% vs. 37.1%, $p = 0.028$), plus lower baseline optimism (mean 10.69 vs. 9.28, $t = 2.28$, $p = 0.024$) and positive affect (mean 23.73 vs. 19.65, $t = 2.45$, $p = 0.015$) scores. In this report, analyses involved only the 172 women who survived for the duration of the study. Table 1 summarizes the demographic and clinical characteristics of the final sample [26,27].

Growth curves for anxiety, depression, and positive affect

Anxiety and depression scores were strongly correlated with each other, but only weakly with positive affect scores (Supplementary 2 in the Supporting Information). To assess the correlations among the growth parameters (latent intercepts and slopes) of anxiety and depression, a parallel-process LGC analysis was initially used to simultaneously model the combined growth curve for anxiety and depression. However, this model failed to converge. Therefore, individual growth models for anxiety, depression, and positive affect were examined separately.

Anxiety

A quadratic growth curve model representing changes in anxiety scores over the first year following baseline fit the data well (Supplementary 3 in the Supporting Information). The average anxiety score was 3.45 at baseline. The model results showed a positive quadratic slope (estimated coefficient = 0.021, $p < 0.001$), indicating that anxiety scores declined initially, and then increased slightly at

Figure 1. Sampling structure and attrition pattern of the study

Table 1. Demographic and clinical characteristics of participants (*n* = 172)

Characteristics	Participants (%)
Demographics	
Age (years) mean ± standard deviation (SD)	51.97 ± 9.44
Marital status	
Married/cohabiting	111(64.5)
Single/divorced/separated/widowed	61(35.4)
Education level	
No/primary formal education	66(38.4)
Secondary/tertiary	106(61.6)
Monthly household income (HK$)[a]	
<$10,000	62(36)
$10,001–30,000	72(41.8)
>$30,001	24(14)
Missing	14(8.1)
Occupation	
Full-time/part-time occupation	53(30.8)
Retired	19(11.1)
Housewife	50(29.1)
Unemployed before/after diagnosis	50(29.1)
Clinical data	
Recurrence of breast cancer	64(37.2)
Metastasis of breast cancer	85(49.4)
Time since first diagnosis(months)	
Mean ± SD (median)	62.53 ± 56.73(42)
Time since current diagnosis(months)	
Mean ± SD (median)	5 ± 12.77(2)
Undergoing active treatment at baseline	
Chemotherapy	27(15.7)
Radiation therapy	19(11)
Hormonal therapy	7(4.1)
Targeted therapy	10(5.8)

HK$, Hong Kong dollars.
[a] 1 US$ = 7.8 HK$.

6 months post-baseline. The intercept was significantly correlated with quadratic ($r = 0.54$; $p = 0.028$) coefficient, indicating the rate of change was dependent on the initial anxiety scores. Patients reporting higher initial levels of anxiety showed greater declines in growth change over time than those reporting lower initial levels.

Depression

A linear growth curve model representing changes in depression scores (Supplementary 3 in the Supporting Information) showed a negative linear slope (estimated coefficient = -0.091, $p < 0.001$), indicating that depression scores declined linearly over time. The average depression score was 3.88 at baseline. The intercept was significantly correlated with linear ($r = -0.90$, $p < 0.001$) coefficients, indicating that rate of decline was dependent on the initial depression score. Patients reporting higher initial levels of depression showed greater declines in growth change over time than those reporting lower initial levels.

Positive affect

A linear growth curve model representing changes in positive affect scores (Supplementary 3 in the Supporting Information) showed a negative linear slope (estimated coefficient = -0.171, $p < 0.001$), indicating that positive affect declined linearly over time. The average positive affect score was 23.09 at baseline. The intercept was unrelated to linear ($r = -0.39$, $p = 0.13$) coefficients, indicating the rate of change was independent on the initial positive affect scores.

Predictors of growth curves for anxiety, depression, and positive affect

Anxiety

Demographic factors, disease condition, and hope did not predict initial or change in anxiety over time. Consequently, we included goal disengagement, goal reengagement, and optimism into the conditional latent growth model (LGM).

The conditional models demonstrated good fit to the data (Supplementary 3 and 4a in the Supporting Information). Goal disengagement (estimated coefficient -0.29, $p = 0.002$), goal reengagement (0.15, $p = 0.020$), and optimism (-0.67, $p < 0.001$) significantly predicted initial anxiety scores (Table 2). Patients with lower goal disengagement and lower optimism, but higher goal reengagement had significantly higher anxiety scores at baseline. Baseline goal disengagement (0.02, $p = 0.021$) and optimism (0.03, $p = 0.011$) significantly predicted subsequent rate of change in anxiety scores. Patients reporting lower goal disengagement and lower optimism at baseline showed faster rates of decline in their anxiety scores.

Next, we tested if optimism moderates the effect of goal adjustment on anxiety by the additional inclusion of their cross-products (optimism × disengagement/reengagement). Optimism moderated the effect of goal disengagement on initial anxiety scores (estimated coefficient = 0.08, $p = 0.029$) but not the effect of goal re-engagement (Figure 2a). Women with low goal disengagement reported high initial anxiety scores if they also had low optimism scores.

Depression

Except for recurrence status, neither demographic, clinical factors, nor hope were related to initial level of, or predicted change in depression scores over time. Consequently, we included goal disengagement, goal reengagement, optimism, and recurrence status into the conditional LGM (Supplementary 3 and 4b in the Supporting Information). Goal disengagement (estimated coefficient = -0.39, $p = 0.004$), goal reengagement (-0.27, $p = 0.008$), and optimism (-0.75, $p < 0.001$) significantly predicted initial depression scores at baseline (Table 2). Baseline optimism (0.04, $p < 0.003$) was also significantly related to rate of change in depression scores; patients reporting lower optimism showed steeper declines in their depression scores.

Next, we tested if optimism moderates the effect of goal adjustment on depression by the additional inclusion of their cross-products (optimism × disengagement/reengagement). Optimism moderated the association between goal disengagement on initial depression scores (estimated coefficient = 0.05, $p = 0.028$) (Figure 2b). Women with low goal disengagement reported higher initial depression scores if they also had low optimism.

Positive affect

Demographic factors and disease condition did not predict positive affect. Consequently, we included goal disengagement, goal reengagement, optimism, and hope into the conditional LGM, producing a good fit to data (Supplementary 3 and 4c in the Supporting Information). At baseline, goal reengagement (estimated coefficient = 0.46, $p < 0.001$), optimism (0.48, $p = 0.010$), and hope (0.17, $p < 0.001$) were significantly associated with initial positive affect scores (Table 2). Patients with higher goal reengagement, higher optimism, and higher hope scores also had significantly higher positive affect scores at baseline. However, only optimism (-0.04, $p = 0.035$) significantly predicted rate of change in positive affect scores, with optimists showing slower rates of subsequent decline.

Table 2. Latent growth models of anxiety, depression, and positive affect

Covariates	Anxiety		Depression		Positive affect	
	Initial status Estimate, SE	Rate of change Estimate, SE	Initial status Estimate, SE	Rate of change Estimate, SE	Initial status Estimate, SE	Rate of change Estimate, SE
Model 1						
Goal disengagement	−0.29, 0.09**	0.02, 0.01**	−0.39, 0.13**	0.02, 0.01	−0.29, 0.21	0.01, 0.02
Goal reengagement	0.15, 0.06*	−0.01, 0.01	−0.27, 0.10**	0.01, 0.01	0.46, 0.13***	0.01, 0.02
Optimism	−0.67, 0.09***	0.03, 0.01***	−−0.75, 0.09***	0.04, 0.01***	0.48, 0.19**	−0.04, 0.02*
Hope	—	—	—	—	0.17, 0.04***	−0.01, 0.01
Recurrence	—	—	−0.39, 0.5	0.07, 0.05	—	—
Model 2						
Goal disengagement	−1.14, 0.28***	0.09, 0.04*	−0.74, 0.29**	0.06, 0.05	−0.29, 0.20	0.01, 0.02
Goal reengagement	0.14, 0.06*	−0.01, 0.01	−0.54, 0.22 **	0.03, 0.03	0.46, 0.13***	0.01, 0.02
Optimism	−1.45, 0.27***	0.09, 0.04*	−1.45, 0.28***	0.14, 0.05**	0.48, 0.19**	−0.04, 0.02*
Hope	—	—	—	—	0.17, 0.04***	−0.01,0.01
Optimism * Goal disengagement	0.08, 0.03***	−0.01, 0.01	0.05, 0.02*	−0.01, 0.01	−0.02, 0.04	0.01,0.01
Optimism * Goal reengagement	0.01, 0.02	0.01, 0.01	0.05, 0.02	−0.01, 0.01	0.11, 0.06	−0.01, 0.01
Hope * Goal disengagement	—	—	—	—	−004, 0.02	0.01, 0.01
Hope * Goal reengagement	—	—	—	—	0.03, 0.01***	−0.01,0.01
Recurrence	—	—	−0.46, 0.50	0.07, 0.06	—	—

SE, standard errors.
*$p < 0.05$.
**$p < 0.01$.
***$p < 0.001$.
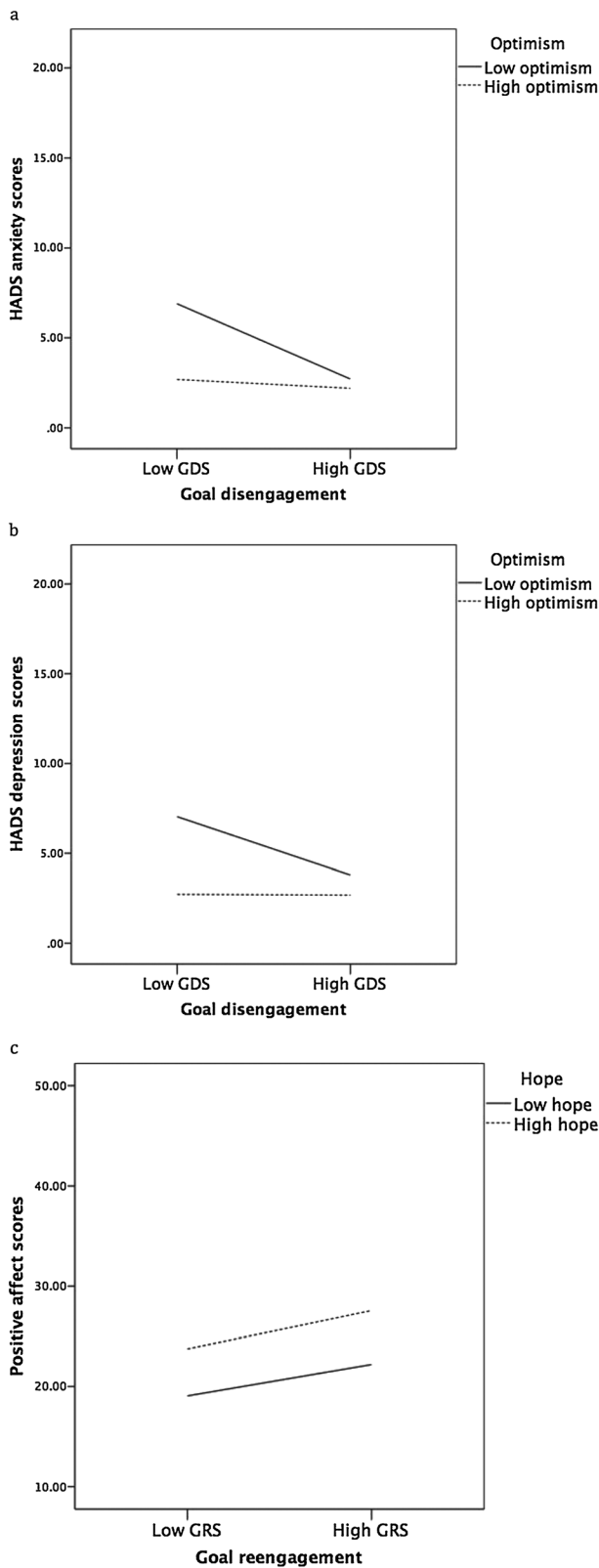
Figure 2. (a) Optimism as a moderator of goal disengagement (GDS) and baseline anxiety, (b) optimism as a moderator of goal disengagement (GDS) and baseline depression, and (c) hope as a moderator of goal reengagement (GRS) and baseline positive affect

We then tested if optimism and hope moderate the effect of goal reengagement on positive affect by the inclusion of their cross-product (hope/optimism × goal reengagement). Optimism did not, but hope (estimated coefficient 0.03, $p < 0.001$) did moderate the effect of goal reengagement on positive affect scores at baseline (Figure 2c). Women with low goal reengagement reported higher initial positive affect scores if they also reported high hope, whereas women with high goal reengagement reported a lower initial positive affect scores if they also reported low hope.

Discussion

This longitudinal study examined if goal adjustment tendencies influenced subsequent psychological adjustment among women with ABC, and whether dispositional hope and optimism moderated effects of goal adjustment on psychological adjustment. Consistent with previous reports [9,15,16,28], we found goal disengagement and reengagement in women diagnosed with ABC were related to psychological well-being relatively independently. Goal disengagement was mostly associated with distress, but not positive affect. Greater goal disengagement capacity was associated with lower initial anxiety and depression scores, suggesting that in women recently diagnosed with ABC lower anxiety and depression is seen with greater ability to disengage from unattainable goals. In contrast, goal reengagement was again concurrently related not only to anxiety and depression but also to positive affect. Women able to reengage with new goals reported not only higher positive affect and lower depression but also greater anxiety at baseline. At baseline, women were awaiting or had just started chemotherapy. The potential impacts of chemotherapy may heighten women's uncertainty and hence anxiety about pursuing new goals. There is evidence that goal reengagement can reduce psychological well-being, as when individuals pursuit too many new goals, depleting resources and increasing coping demands [28–30]. So while goal reengagement tendencies can contribute to stabilizing psychological well-being generally, they may not necessarily be helpful in coping with anxiety. Moreover avoidance of outcome-related anxiety could feasibly prompt goal adjustment tendencies.

Anxiety apart, goal disengagement and reengagement were mainly related to initial levels of depression and positive affect, but not their rates of change. Unexpectedly, our findings showed higher goal disengagement capacity predicted slower rates of decline in anxiety levels. This likely involves the different rates of decline in anxiety seen for women with high versus low initial anxiety scores. Low baseline anxiety declines are limited by floor effects and are more likely to present as a stable low level over time [5], whereas high anxiety levels at baseline have greater room for decline over time. This occurred in the

observed growth curves of anxiety. Two recent longitudinal studies examined goal adjustment impacts on cancer patient's psychological well-being [15,16], assessing psychological well-being twice, with a 3-month interval, and both reported goal adjustment effects on psychological well-being primarily at baseline. One [16] observed goal reengagement alone predicted 3-month changes in positive affect among breast cancer survivors, whereas Thompson *et al.* [15] found goal adjustment was unrelated to subsequent psychological well-being among women with metastatic breast cancer. The present study extends this work by examining the effect of goal disengagement and reengagement together with dispositional optimism and hope on psychological well-being. Of the four variables studied, dispositional optimism was most influential in predicting rates of change in psychological well-being among women with ABC. Our findings highlight the necessity of examining multiple factors in relation to adjustment to cancer diagnosis in future studies.

Our second and third hypotheses examined the interaction of goal adjustment and two established resilience markers, dispositional optimism and hope, on psychological well-being following a diagnosis of ABC. Our results suggested that optimism with goal disengagement and hope with goal reengagement reflect two distinct process clusters associated with psychological outcomes among women diagnosed with ABC. Optimism moderated associations between goal disengagement and anxiety and depression, whereas hope moderated associations between goal reengagement and positive affect. These moderating effects appeared cross-sectionally but not longitudinally, suggesting they occur only with higher arousal levels. Our findings show that optimism may protect against anxiety and depression for women with ABC struggling to relinquish unattainable goals. Because optimists generally anticipate positive outcomes, this may compensate for the failure to disengage from unattainable goals [31] or feel that their goals would nonetheless be achieved despite cancer and so remained engaged, thereby avoiding loss-related negative affect. In contrast, hope is linked to goal reengagement. Women who could easily reengage in new or alternative goals reported better baseline positive affect if they were high-hope individuals. High-hope individuals hold strong determination to reach the desired goals together with the perceived ability to generate viable plans to attain them [17]. Again, expectation of success is more likely to generate positive rather than negative affect so long as such expectations can be maintained. Women with high hope perhaps not only feel able to engage new goals but also perceive a higher probability of successful attainment and thereby are likely to have better positive affect in response to the diagnosis of ABC.

Study limitations and implications include, first, uncertain causality reflected in primarily cross-sectional associations between goal adjustment and psychological well-being at baseline, but these may also indicate variable moderation, occurring only at higher distress levels. Second, we used whole-sample averaged values of psychological well-being, which showed little change over time following a diagnosis of ABC. However, sub-groups of cancer patients consistently show distinctly different adjustment and functional trajectories over time following a cancer diagnosis [5,32–34]. Studies that explore if goal adjustment differentiates trajectories of psychological well-being following the diagnosis of ABC would be useful. Third, anxiety and depression were highly correlated, suggesting the HADS may poorly differentiate these constructs. Parallel-process LGMs that simultaneously modeled the growth curves for anxiety and depression are preferred but failed to converge, requiring separate LGC models for anxiety and depression, with commensurate problems of collinearity. Despite apparent similarities between conditional models for anxiety and depression, the relationships of goal disengagement and reengagement with anxiety and depression are different, suggesting that goal adjustment differentially impacts these two outcomes. Fourth, conceptualizing goal adjustment as a dispositional trait meant situational goal adjustment was not examined. Whether situational goal adjustment affects long-term psychological well-being, the parallel processes of situational goal adjustment, and psychological well-being over time awaits clarification. Finally, the present study found no difference of psychological well-being between women with locally advanced BC and those with metastatic BC. Treatment advances now prolonged survival, so impacts of metastatic BC may not emerge until the later stages of the illness trajectory. This study only evaluated the psychological outcomes over the first 12 months of the diagnosis of ABC. Future studies should examine longer-term impacts of ABC on psychological well-being.

In summary, we showed that optimistic women with ABC who can relinquish unattainable goals report less concurrent anxiety and depression. Moreover, women who demonstrated hopeful goal-directed behavior toward new meaningful goals were likely to report better initial psychological adjustment. These findings may help inform specific interventions for women struggling to cope following the diagnosis of ABC. Those helping women with ABC to manage their distress may find that assisting patients to relinquish unattainable goals and refocus on more achievable alternative goals could enhance women's positive adjustment.

Acknowledgements

References

1. Stebbing J, Ngan S. Breast cancer (metastatic). *Clin Evid* 2010;**9**:811.
2. Lee MC, Newman LA. Management of patients with locally advanced breast cancer. *Surg Clin North Am* 2007;**87**(2):379–398.
3. Grabsch B, Clarke DM, Love A, *et al.* Psychological morbidity and quality of life in women with advanced breast cancer: a cross-sectional survey. *Palliat Support Care* 2006;**4**(1):47–56.
4. Hwang SS, Chang VT, Fairclough DL, Cogswell J, Kasimis B. Longitudinal quality of life in advanced cancer patients: pilot study results from a VA medical cancer center. *J Pain Symptom Manage* 2003;**25**(3):225–235.
5. Lam WWT, Soong I, Yau TK, *et al.* The evolution of psychological distress trajectories in women diagnosed with advanced breast cancer: a longitudinal study. *Psycho-Oncology* 2013;**22**(12):2831–2839.
6. Kissane DW, Grabsch B, Love A, Clarke DM, Bloch S, Smith GC. Psychiatric disorder in women with early stage and advanced breast cancer: a comparative analysis. *Aust N Z J Psychiatry* 2004;**38**(5):320–326.
7. Scheier MF, Carver CS. Goal and confidence as self-regulatory elements underlying health and illness behavior. In *The Self-regulation of Health and Illness Behaviour*, Oxon: Routledge, 2003.
8. Wrosch C, Scheier MF, Miller GE, Schulz R, Carver CS. Adaptive self-regulation of unattainable goals: goal disengagement, goal reengagement, and subjective well-being. *Pers Soc Psychol Bull* 2003;**29**(12):1494–1508.
9. Wrosch C, Miller GE, Scheier MF, de Pontet SB. Giving up on unattainable goals: benefits for health? *Pers Soc Psychol Bull* 2007;**33**(2):251–265.
10. Wrosch C, Scheier MF, Carver CS, Schulz R. The importance of goal disengagement in adaptive self-regulation: when giving up is beneficial. *Self Identity* 2003;**2**:1–20.
11. Duke J, Leventhal H, Brownlee S, Leventhal EA. Giving up and replacing activities in response to illness. *J Gerontol B Psychol Sci Soc Sci* 2002;**57**(4):367–376.
12. O'Connor RC, Fraser L, Whyte MC, MacHale S, Masterton G. Self-regulation of unattainable goals in suicide attempters: the relationship between goal disengagement, goal reengagement and suicidal ideation. *Behav Res Ther* 2009;**47**(2):164–169.
13. Offerman MP, Schroevers MJ, van der Velden LA, de Boer MF, Pruyn JF. Goal processes & self-efficacy related to psychological distress in head & neck cancer patients and their partners. *Eur J Oncol Nurs* 2010;**14**(3):231–237.
14. Schroevers M, Kraaij V, Garnefski N. How do cancer patients manage unattainable personal goals and regulate their emotions? *Br J Health Psychol* 2008;**13**:551–562.
15. Thompson E, Stanton AL, Bower JE. Situational and dispositional goal adjustment in the context of metastatic cancer. *J Pers* 2013;**81**(5):441–451.
16. Wrosch C, Sabiston CM. Goal adjustment, physical and sedentary activity, and well-being and health among breast cancer survivors. *Psycho-Oncology* 2013;**22**(3):581–589.
17. Snyder CR. The past and possible futures of hope. *J Soc Clin Psychol* 2000;**19**:11–28.
18. Irving LM, Snyder CR, Crowson JJ. Hope and coping with cancer by college women. *J Pers* 1998;**66**(2):195–214.
19. Scheier MF, Carver CS. Optimism, coping, and health: assessment and implications of generalized outcome expectancies. *Health Psychol* .1985;**4**(3):219–247.
20. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatr Scand* 1983;**67**(6):361–370.
21. Leung CM, Wing YK, Kwong PK, Lo A, Shum K. Validation of the Chinese-Cantonese version of the hospital anxiety and depression scale and comparison with the Hamilton Rating Scale of Depression. *Acta Psychiatr Scand* 1999;**100**(6):456–461.
22. Hou WK, Law CC, Fu YT. Does change in positive affect mediate and/or moderate the impact of symptom distress on psychological adjustment after cancer diagnosis? A prospective analysis. *Psychol Health* 2010;**25**(4):417–431.
23. Lai JCL, Yue X. Measuring optimism in Hong Kong and mainland Chinese with the revised Life Orientation Test. *Pers Individ Dif* 2000;**28**:781–796.
24. Ho SMY, Ho J, Bonanno GA, *et al.* Hopefulness predicts resilience after hereditary colorectal cancer genetic testing: a prospective outcome trajectories study. *BMC Cancer* 2010;**10**(1):279.
25. Wang J, Wang X. *Structural Equation Modeling Applications Using Mplus*, Wiley: Chichester, West Sussex, 2012.
26. Enders CK. The performance of the full information maximum likelihood estimator in multiple regression models with missing data. *Educ Psychol Meas* 2001;**61**(5):713–740.
27. Graham JW. Missing data analysis: making it work in the real world. *Annu Rev Psychol* 2009;**60**:549–576.
28. Dunne E, Wrosch C, Miller GE. Goal disengagement, functional disability, and depressive symptoms in old age. *Health Psychol* 2011;**30**(6):763–770.
29. Garnefski N, Kraaij V, Schroevers MJ. Cognitive coping and goal adjustment after first-time myocardial infarction: relationships with symptoms of depression. *Behav Med* 2009;**35**(3):79–86.
30. Wrosch C, Amir E, Miller GE. Goal adjustment capacities, coping, and subjective well-being: the sample case of caregiving for a family member with mental illness. *J Pers Soc Psychol* 2011;**100**(5):934–946.
31. Rasmussen HN, Wrosch C, Scheier MF, Carver CS. Self-regulation processes and health: the importance of optimism and goal adjustment. *J Pers* 2006;**74**(6):1721–1748.
32. Helgeson VS, Snyder P, Seltman H. Psychological and physical adjustment to breast cancer over 4 years: identifying distinct trajectories of change. *Health Psychol* 2004;**23**(1):3–15.
33. Henselmans I, Helgeson VS, Seltman H, *et al.* Identification and prediction of distress trajectories in the first year after a breast cancer diagnosis. *Health Psychol* 2010;**29**(2):160–168.
34. Lam WWT, Bonanno GA, Mancini AD, *et al.* Trajectories of psychological distress among Chinese women diagnosed with breast cancer. *Psycho-Oncology* 2010;**19**(10):1044–1051.

Supporting information

Additional supporting information may be found in the online version of this article at the publisher's web site.