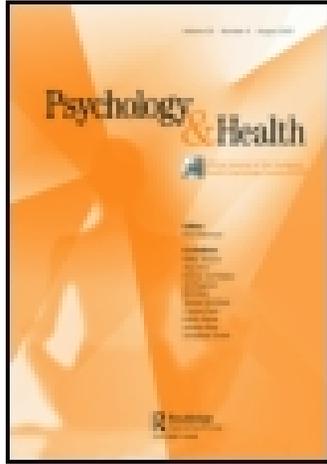


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## Psychology & Health

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/gpsh20>

### The role of goal adjustment in symptoms of depression, anxiety and fatigue in cancer patients receiving psychosocial care: a longitudinal study

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Accepted author version posted online: 29 Sep 2014.



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To cite this article: Lei Zhu, Adelita V. Ranchor, Marije van der Lee, Bert Garssen, Robbert Sanderman & Maya J. Schroevers (2014): The role of goal adjustment in symptoms of depression, anxiety and fatigue in cancer patients receiving psychosocial care: a longitudinal study, *Psychology & Health*, DOI: [10.1080/08870446.2014.969263](https://doi.org/10.1080/08870446.2014.969263)

To link to this article: <http://dx.doi.org/10.1080/08870446.2014.969263>

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**Publisher:** Taylor & Francis

**Journal:** *Psychology & Health*

**DOI:** <http://dx.doi.org/10.1080/08870446.2014.969263>

**Goal adjustment, psychological symptoms, and fatigue in cancer patients receiving psychosocial care: a longitudinal study**

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Word count (excluding abstract/figures/tables/reference list): 3766

## **The role of goal adjustment in symptoms of depression, anxiety, and fatigue in cancer patients receiving psychosocial care: a longitudinal study**

### **Abstract**

*Objective:* This study examined whether cancer patients reported increases in their goal adjustment capacities while receiving psychosocial care and whether these increases were related to changes in symptoms of depression, anxiety, and fatigue. Goal adjustment was conceptualized as two independent capacities: goal disengagement (i.e. disengage from unattainable goals) and goal reengagement (i.e. reengage into new goals).

*Design:* This naturalistic, longitudinal study focused on 241 cancer patients receiving psychosocial care at one of the seven psycho-oncology institutions in the Netherlands. Data was collected before the start of psychosocial care (T1) and nine months thereafter (T2). Hierarchical regression analysis was used to examine the research questions.

*Main Outcome Measures:* Goal adjustment, and symptoms of depression, anxiety and fatigue.

*Results:* At group level, patients reported small increases in goal disengagement ( $d = 0.22$ ) but no significant change in goal reengagement ( $d = 0.09$ ). At an individual level, 34% of cancer patients reported an increase in goal disengagement and 30% an increase in goal reengagement. Increases in goal reengagement were significantly associated with decreases in both depressive and anxiety symptoms, but not to changes in fatigue.

*Conclusion:* Findings indicate that particularly improvements in goal reengagement are beneficial for cancer patients' psychological functioning.

*Keywords:* goal adjustment; cancer patients; psychosocial care; depressive symptoms; anxiety symptoms; fatigue symptoms.

**Introduction**

A diagnosis of cancer is often regarded as a highly stressful experience that may impact patients' physical and psychological functioning. Specifically, elevated levels of symptoms of depression and anxiety as well as fatigue have been found (Mosher & DuHamel, 2012; Johnson, Gold, & Wyche, 2010; Kurtz, Kurtz, Stommel, Given, & Given, 2001). Recent research suggests that people may feel disturbances in the attainment of personal goals from cancer, which may play an important role in determining cancer patients' functioning (Offerman, Schroevers, van der Velden, de Boer, & Pruyn, 2010). The extent to which cancer patients are able to manage threatened or unattainable goals has been related to their psychological functioning (Thompson, Stanton, & Bower, 2013; Wrosch & Sabiston, 2013; Schroevers, Kraaij, & Garnefski, 2011; Schroevers, Kraaij, & Garnefski, 2008). The aim of this longitudinal study is to increase our understanding of the role of goal adjustment for cancer patients' functioning, by examining the extent to which goal adjustment capacities can change over time and whether and how such changes are related to changes in symptoms of depression, anxiety, and fatigue.

According to the self-regulation theories, personal goals direct a person's behavior and give structure and meaning to life (Carver & Scheier, 1999; Emmons, 1986; Fitzsimons & Bargh, 2004; Karoly, 2010). As such, people are constantly engaged, consciously or unconsciously, in comparing the current state with how they want or do not want things to be. If this comparison yields significant discrepancies, people may feel distress and need to reduce the discrepancies. One way to restore well-being is to increase effort to obtain the goal. However, in the case of being confronted with goals that become unattainable, it is assumed that it is more adaptive to adjust one's goals (Wrosch &

Scheier, 2003a; Wrosch, Scheier, Miller, Schulz, & Carver, 2003b). Wrosch et al. propose a model that describes two self-regulation goal strategies people can use to adjust their goals. *Goal disengagement* reflects the capacity to reduce effort and commitment from unattainable goals, which may help to avoid accumulated failure experiences and release limited resources (i.e., time, attention, energy) that can be used for other meaningful activities (Wrosch & Scheier, 2003a). *Goal reengagement* refers to the capacity to be able to identify and put effort into new attainable goals, which is believed to be able to bring new sense of purpose to life and enhance positive feelings (Wrosch & Scheier, 2003a).

Wrosch et al. indicate that goal adjustment capacities can be seen as important personality factors that can determine psychological well-being in general (Wrosch, Miller, Scheier, & de Pontet, 2007; Wrosch & Scheier, 2003a). Both goal disengagement and goal reengagement capture *general* reactions of people to unattainable goals. As such, goal disengagement and goal reengagement capacities are assumed to be relatively stable dispositional characteristics that determine psychological well-being (Wrosch, Miller, Scheier, & de Pontet, 2007). The theory of Wrosch et al. suggests that there are individual differences in a person's dispositional goal adjustment capacities (Wrosch & Scheier, 2003a). Some people are better able than others to disengage from unattainable goals and/or to identify (new) alternative goals to pursue, and those persons with higher dispositional goal adjustment capacities are assumed to have a better psychological well-being. Several empirical studies have provided supportive evidence. Cross-sectional and longitudinal studies, mainly in adolescents, college students, and healthy adults, have indeed found that persons with higher dispositional goal disengagement and

reengagement capacities reported better concurrent and future levels of psychological well-being and physical health (Wrosch & Miller, 2009; Wrosch et al., 2007; Wrosch, Scheier, Miller, Schulz, & Carver, 2003b).

A limitation of these studies is that they were mostly conducted in healthy persons. It is assumed that dispositional goal adjustment capacities become even more important when people face stressful life circumstances, such as chronic diseases, as the diagnosis and the medical treatment may severely threaten a person's important goals in life (Wrosch & Scheier, 2003a). A few cross-sectional studies have examined the role of goal adjustment in functioning of those with a medical condition (Garnefski, Kraaij, De Graaf, & Karels, 2010; Kraaij, Garnefski, & Schroevers, 2009; Garnefski, Grol, Kraaij, & Hamming, 2009a; Garnefski, et al., 2009b; Kraaij et al., 2008). Specifically in cancer patients, two cross-sectional studies have found that patients with higher goal adjustment capacities, especially goal reengagement, reported better psychological functioning (Schroevers, Kraaij, & Garnefski, 2011; Schroevers, Kraaij, & Garnefski, 2008). Moreover, one longitudinal study in cancer patients found that persons with higher baseline goal reengagement capacities reported increases in positive affect over three months (Wrosch & Sabiston, 2013).

In general, there is a lack of knowledge on the stability of goal adjustment and the assumption that goal adjustment capacities are relatively stable dispositional characteristics, as most research on this topic had a cross-sectional design. Empirical evidence from a recent study in women facing infertility difficulties found no significant changes in goal adjustment over a six-month period (Thompson, Woodward, & Stanton, 2011). One other study in adolescent girls did not explicitly examine changes in levels of

goal adjustment over time, yet increases in goal disengagement capacities did predict subsequent improvements in depressive symptoms (Wrosch & Miller, 2009).

To fill in these gaps, the overall aim of this longitudinal study was to examine the changeability of goal adjustment over time and the role of goal adjustment for cancer patients' functioning, in terms of the report of symptoms of depression, anxiety, and fatigue. In order to increase the external validity and clinical relevance of the study, hereby reflecting the heterogeneity of patients in general practice (Leichsenring, 2004; Seligman, 1995), we used a naturalistic study design and focused on a large group of cancer patients receiving psychosocial care in specialized psycho-oncology institutions. It can be assumed that, within this context, patients would experience improvements in symptoms of depression, anxiety, and fatigue. In order to better understand how psychosocial care could be associated with improved symptoms, we examined whether patients also showed increases in goal adjustment and to what extent increases in goal adjustment were related to improvements in symptoms. We also took into account the notion that goal reengagement can buffer the negative influence of difficulties in goal disengagement on psychological well-being (Thompson et al., 2011; O'Connor, Fraser, Whyte, MacHale, & Masterton, 2009; Wrosch et al., 2007). The first hypothesis of this study was that there would be an increase in both goal disengagement and goal reengagement capacities over time. The second hypothesis was that increases in both goal disengagement and goal reengagement would be related to decreases in depressive and anxiety symptoms. There is very little literature on the role of goal adjustment capacities on fatigue. Only one cross-sectional study in patients with polyarthritis examined goal adjustment in relation to fatigue, showing that goal adjustment was not related to fatigue

(Arends, Bode, Taal, & Van de Laar, 2013). Therefore, no specific hypothesis was formulated regarding the association of changes in goal adjustment with changes in fatigue.

## **Method**

### **Sample and procedure**

This study focused on cancer patients who sought help in psycho-oncology institutions in the Netherlands. All seven psycho-oncology institutions in the Netherlands participated in this study. This study was organized and conducted by one of these participating psycho-oncology institutions, the Helen Dowling Institute, in combination with Department of Health Psychology of the University Medical Center Groningen in the Netherlands. When patients sought help at these institutions, they were provided the information of this study. The inclusion criteria were: (1) diagnosed with cancer and seeking help at one of these institutions, (2) older than 18, (3) able to complete questionnaires in Dutch. Patients were asked to participate in the study between September 2008 and March 2010.

A total of 611 patients were informed, of whom 524 patients agreed to take part in the study and signed the informed consent form. Before the start of psychosocial care, 401 patients completed the first assessment (Time 1), of whom 384 patients were included at baseline assessment. Seventeen of the 401 were excluded from the study: eight patients decided not to receive any care, and nine patients did not complete the baseline assessment. After nine months, 241 patients (63% of the 384) completed the second assessment (Time 2). Of the 143 patients who dropped out due to too ill or other reasons. This study examined the data from patients who completed both assessments (N

= 241). Comparing the 143 drop-outs to those 241 patients, we found that dropouts were less often treated with operation, lower educated, and more likely to be male ( $p < 0.05$ ). There were no significant differences at baseline levels of goal adjustment or symptoms of depression, anxiety, and fatigue between the 241 participants and 143 drop-outs ( $p > 0.05$ ).

## Measures

### Demographic and medical characteristics

At the baseline assessment, demographic (i.e. age, gender, educational level, relationship) and medical characteristics (i.e. time since diagnosis, cancer type, recurrence, type of medical treatment) were obtained by a self-report questionnaire with eight questions. Each characteristic was measured by one question. Age was used as a continuous variable, and gender was classified into female (= 0) or male (= 1). Educational level was classified into three levels: low level = 1 (i.e. primary schooling, lower vocational education), middle level = 2 (i.e. secondary schooling, middle vocational education), and high level = 3 (i.e. university education, higher vocational education). Relationship status (i.e. having a partner or not) was classified into yes (= 1) or no (= 0). Time since diagnosis (in years) was calculated by using the enrollment year in this study minus the year of cancer diagnosis, and was used as a continuous variable. Cancer type was classified into breast cancer (= 1), digestive system cancer (= 2), lung cancer (= 3), hematologic cancer (= 4), head and neck cancer (= 5), gynecological cancer (= 6), multiple malignant tumors (= 7), and others (= 8). Patients were asked whether they had experienced a cancer recurrence (yes = 1; no = 0), and whether they had received each of

the following medical treatment: operation (=1), chemotherapy (=2), radiotherapy (= 3), and other treatment (=4).

#### Psychosocial care characteristics

At the second assessment, a self-report questionnaire with two questions was used to obtain information about the type of received psychosocial care and whether patients had finished psychosocial care (yes = 1; no = 0). Patients were asked whether they had received each of the following psychosocial care: individual therapy, group therapy, and other therapy (e.g. haptonomy). As most patients received a combination of psychosocial care, a categorical variable was created under four categories: individual therapy (with/without other therapy) (= 1), group therapy (with/without other therapy) (= 2), individual therapy and group therapy (with/without other therapy) (= 3) and only other therapy (= 4).

#### Symptoms of depression

The 16 negatively formulated items version of Center for Epidemiologic Studies Depression Scale (CES-D) was used to measure depressive symptoms (Radloff, 1977). This adapted version was found to be a more valid measure of depressive symptoms in general population and cancer patients (Schroevers, Sanderman, van Sonderen, & Ranchor, 2000). A sample item is 'I was bothered by things that don't usually bother me'. The answer categories range from 0 (<1 day) to 3 (5-7 days). The total scores can vary from 0 to 48. On the original 20-item CES-D, a score of 16 can be used as an indication for clinical depression (Radloff, 1977). On the 16-item CES-D, a score of 10 can be used as the cut-off point (Schroevers, Sanderman, van Sonderen, & Ranchor, 2000). The CES-

D has been found to have good reliability, validity, and sensitivity to change (Schroevers et al., 2000; Radloff, 1977). In this study, Cronbach's alphas were 0.88 at T1 and 0.91 at T2.

#### Symptoms of anxiety

Anxiety was measured by the short six-item version of the State-Trait Anxiety Inventory (STAI) (Marteau & Bekker, 1992; Spielberger, Gorsuch, & Lushene, 1970). This six-item version of the STAI has been validated among general population (Marteau & Bekker, 1992) and used to measure anxiety symptoms among cancer patients (Henselmans et al., 2010). A sample item is 'I feel calm'. Each item can be answered on 4 categories from 1 (not at all) to 4 (very much). The total scores can vary from 6 to 24. For the 20-item version of the STAI, a score of 44 was used to indicate clinical anxiety in cancer patients (Korfage, Esskink-Bot, Janssens, Schroder, & de Koning, 2006). For the six-item version of the STAI, a score of 12 was used as the cut-off point in people with chronic diseases (Luttik, Jaarsma, Sanderman, & Fleer, 2011). The STAI has been found to have good reliability, validity and sensitivity to change (van der Bij et al., 2003; Marteau & Bekker, 1992). In this study, Cronbach's alphas were 0.85 at T1 and 0.86 at T2.

#### Symptoms of fatigue

An eight-item subscale of subjective fatigue of the Checklist Individual Strength (CIS) was used to measure fatigue symptoms (Vercoulen et al., 1994). This subscale quantifies subjective fatigue, has been validated among general population (Vercoulen et al., 1994)

and used to assess fatigue in cancer patients before (Goedendorp, Gielissen, Verhagen, & Bleijenberg, 2013). A sample item is 'I feel tired'. Each statement has a 7-point scale from 1 (Yes, that is true) to 7 (No, that is not true). The total score can vary from 8 to 56. A score of 35 can be used as a cut-off point for severe fatigue (Vercoulen et al., 1994). The CIS has shown good reliability, validity, and sensitivity to change (Goedendorp, Gielissen, Verhagen, & Bleijenberg, 2013; Vercoulen et al., 1994). In this study, Cronbach's alphas were 0.92 at T1 and 0.91 at T2.

### Goal adjustment

Goal adjustment, in terms of goal disengagement and goal reengagement, was measured by a ten-item Goal Adjustment Scale (GAS) (Wrosch, Scheier, Miller, Schulz, & Carver, 2003b). Four items constitute the goal disengagement subscale and measure the ease with which participants can give up efforts and commitment towards the unattainable goals. A sample item is 'When I could no longer pursue this goal, it was easy for me to reduce effort towards the goal'. The other six items make up the goal reengagement subscale, and evaluate the extent to which patients reengage into new attainable goals when confronting unattainable goals. A sample item is 'When I could no longer pursue this goal, I put effort towards other meaningful goals'. Each item has a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). The total score of goal disengagement subscale can vary from 4 to 20. The total score of goal reengagement subscale can range from 6 to 30. The GAS has been widely used among general population (Wrosch, Scheier, Miller, Schulz, & Carver, 2003b) as well as in cancer patients (Thompson, Stanton, & Bower, 2013; Wrosch & Sabiston, 2013; Schroevers, Kraaij, & Garnefski,

2011; Schroevers, Kraaij, & Garnefski, 2008). The GAS has been shown to have good reliability and validity (Schroevers, Kraaij, & Garnefski, 2011; Wrosch et al., 2003b). For the goal disengagement subscale, we found Cronbach's alphas 0.82 at T1 and 0.81 at T2. For the goal reengagement subscale, we found Cronbach's alphas 0.87 at T1 and 0.86 at T2.

### Statistical Analysis

Descriptive statistics on goal adjustment and symptoms of depression, anxiety, and fatigue were presented by means, standard deviations, and range of scores. *Change scores* in these variables were computed by subtracting the T1 scores from the T2 scores.

In order to examine whether there were significant changes for these variables from T1 to T2 at the group level, paired sample t-tests were applied, and effect sizes (Cohen's *d*) were calculated. Furthermore, we also examined changes in goal adjustment at individual level. Half of Standard Deviation (0.5SD) was used as an indicator of a clinically relevant change (Norman, Sloan, & Wyrwich, 2003). Patients with *change scores* in goal adjustment higher than 0.5SD can be seen as having an increase in goal adjustment. Patients with *change scores* lower than -0.5SD can be seen as having a decrease in goal adjustment. Patients with *change scores* between -0.5SD and 0.5SD can be seen as no change.

Pearson correlations were used to explore inter-correlations among study variables. To examine relationships between *changes* in goal adjustment and *changes* in symptoms of depression, anxiety, and fatigue, separate hierarchical regression analyses were performed for *changes* in symptoms of depression, anxiety, and fatigue respectively. We

controlled for baseline goal disengagement, goal reengagement and symptoms (entered in Step 1). Moreover, all variables described in Table 1 (i.e. age, gender, educational level, relationship, recurrence, time since diagnosis, cancer type, type of medical treatment, type of psychosocial care, and whether psychosocial care finished at T2) were examined as possible confounders by using t-test, ANOVA and Pearson Correlation. Only psychosocial care finished at T2 was significantly related to *changes* in depressive and anxiety symptoms ( $p < 0.05$ ). For this reason, although psychosocial care was not significantly related to *changes* in goal disengagement and goal reengagement ( $p > 0.05$ ), we used psychosocial care finished at T2 as a control variable and entered in Step 1 of the hierarchical regression analyses on symptoms of depression and anxiety. *Change scores* in goal disengagement and reengagement were entered in Step 2. The interaction term between *change scores* in goal disengagement and *change scores* in goal reengagement was entered in Step 3.

## Results

### Sample characteristics

The characteristics of the participants are presented in Table 1. The majority were female, having a relationship, and moderately to highly educated. About half of the patients were diagnosed with breast cancer. Most patients received combined medical treatments. More than half of patients received individual psychosocial care (with or without other types of psychosocial care). About half of cancer patients finished psychosocial care at T2, and the other half were still receiving some types of psychosocial care.

-----Please insert Table 1 here-----

### Changes in goal adjustment

Means and standard deviations of goal disengagement and goal reengagement capacities can be seen in Table 2. At group level, goal disengagement increased significantly yet marginal over time ( $d = 0.22$ ), whereas goal reengagement did not change significantly (Table 2). These findings partly confirmed our first hypothesis, by showing that cancer patients reported increases in goal disengagement but not in goal reengagement. At an individual level, 48% of the patients showed a stable level of goal disengagement, while 34% showed an increase and 18% a decrease in goal disengagement. Similarly, 44% of the patients maintained a stable level of goal reengagement, while 30% showed an increase and 26% a decrease in goal reengagement.

-----Please insert Table 2 here-----

#### Changes in symptoms of depression, anxiety, and fatigue

Means and standard deviations of the three symptoms are described in Table 2. The baseline levels of depressive, anxiety, and fatigue symptoms were somewhat higher than those cancer patients in general (Goedendorp et al., 2013; Pullens, De Vries, Van Warmerdam, De Wal, & Roukema, 2013; Schroevers, Ranchor, & Sanderman, 2003). Symptoms of depression, anxiety, and fatigue decreased significantly over time, with medium effect sizes for symptoms of depression ( $d = 0.65$ ) and anxiety ( $d = 0.58$ ) and a small effect size for fatigue ( $d = 0.34$ ). At T1, 68.9%, 75.5%, and 53.5% of the patients reported clinical depression, anxiety, and fatigue respectively ( $>$  cut-off point). At T2, 44.0%, 54.8%, and 40.7% of the patients reported clinical depression, anxiety, and fatigue respectively ( $>$  cut-off point).

#### Association of changes in goal adjustment with changes in symptoms

The correlations among the study variables are presented in Table 3. Increases in goal disengagement from T1 to T2 were significantly related to decreases in symptoms of anxiety from T1 to T2, but not to decreases in depressive symptoms. Increases in goal reengagement from T1 to T2 were significantly related to decreases in symptoms of depression and anxiety from T1 to T2. Changes in goal disengagement and reengagement from T1 to T2 were not significantly related to changes in fatigue from T1 to T2.

-----Please insert Table 3 here-----

To further examine the value of changes in goal adjustment on changes in depressive and anxiety symptoms, hierarchical regression analyses were performed on changes in depressive and anxiety symptoms respectively. Results showed that the interaction term between changes in goal disengagement and changes in goal reengagement was not significant related with changes in either depressive or anxiety symptoms. Therefore, we repeated the analyses without the interaction term and report the main effects in Table 4. Increases in goal reengagement significantly predicted decreases in depressive symptoms, when controlling for baseline levels. The full model explained 43% of the total variance ( $F(6,215) = 27.15, p < 0.001$ ). Increases in goal reengagement were also significantly associated with decreases in anxiety symptoms, when controlling for baseline levels, with a small additional predictive value of increases in goal disengagement. The overall model explained 44% of the total variance ( $F(6,216) = 28.34, p < 0.001$ ). These results partly confirmed our second hypothesis and indicated that mainly increases in goal reengagement capacities were related to decreases in depressive and anxiety symptoms.

-----Please insert Table 4 here-----

## **Discussion**

This longitudinal study aimed to examine whether cancer patients who received standard psychosocial care reported changes in their capacities to adjust personal goals (i.e. goal disengagement and goal reengagement) and whether such changes were related to changes in depressive, anxiety, and fatigue symptoms. About one third of patients reported an increase in goal disengagement and a similar large group an increase in goal reengagement. A key finding is that mainly increases in goal reengagement were related to improvements in symptoms of depression and anxiety. Another important finding was that neither improved goal disengagement nor goal reengagement was associated with changes in fatigue. These findings suggest that goal adjustment capacities are not stable over time, with individual differences in the capacities to learn to reengage into (new) meaningful goals being most valuable for cancer patients' psychological functioning.

Prior research on goal adjustment has demonstrated that the capacity to adjust personal goals is beneficial for psychological functioning, in general (Wrosch et al., 2007; Wrosch, Scheier, Miller, Schulz, & Carver, 2003b) and specifically in cancer patients (Schroevers, Kraaij, & Garnefski, 2011; Schroevers, Kraaij, & Garnefski, 2008). It is assumed that goal disengagement and goal reengagement relate to *general* reactions of people to unattainable goals and represent relatively stable dispositional capacities (Wrosch & Scheier, 2003a). Results of this study partly confirmed this assumption and were partly in contrast with our first hypothesis. At group level, we found only small significant increases in goal disengagement and no significant change in goal reengagement. One explanation for this finding may be that in the current study, patients received different types of psychosocial care, none specifically focusing on stimulating adaptive goal adjustment. We do not know to what extent these psychosocial care did

address and stimulate adaptive goal adjustment. As our results are in line with a recent longitudinal study on goal adjustment in women facing infertility (Thompson et al., 2011), an alternative explanation may be that, in general, goal adjustment capacities are somewhat stable. The levels of goal adjustment in this study were comparable to those found in a cross-sectional study in cancer patients (Schroevers, Kraaij, & Garnefski, 2008) and somewhat lower than those found in other patient groups (Kraaij, Garnefski, Schroevers, Weijmer, & Helmerhorst, 2010; Garnefski et al., 2009b). This suggests that, as a group, cancer patients in our study started out and remained relatively low in their abilities to adjust their goals.

At an individual level, however, we found that about one third of the cancer patients reported increases in goal disengagement and/or goal reengagement. At this point in time, we cannot be sure why patients reported such increases in their goal adjustment capacities, as patients did not receive a psychosocial treatment specifically focusing on increasing goal adjustment. It might be a non-specific effect of the psychosocial care they received or an indication of natural adaptation (Bjornsson, 2011; Donovan, Kwekkeboom, Rosenzweig, & Ward, 2009; Craighead, Sheets, Bjornsson, & Arnarson, 2005). Future randomized controlled trials may focus on a specific type of psychosocial care or comparing two active treatments, and further examine the efficacy of psychosocial care on improving goal adjustment and to what extent distinct types of psychosocial care differ in their capacities to enhance goal adjustment capacities.

Our second hypothesis was that increases in goal adjustment capacities were associated with decreases in depressive and anxiety symptoms. This hypothesis was partly confirmed, mainly for goal reengagement. Increases in goal reengagement were

significantly related to decreases in both depressive and anxiety symptoms. These findings are consistent and add to current cross-sectional findings in cancer patients, indicating the importance of goal reengagement for cancer patients' psychological well-being (Thompson, Stanton, & Bower, 2013; Wrosch & Sabiston, 2013; Schroevers, Kraaij, & Garnefski, 2011; Schroevers, Kraaij, & Garnefski, 2008).

Our findings emphasizing the role of goal reengagement for patients' psychological functioning, independent of the ability to disengage, add to the ongoing debate about whether goal disengagement and reengagement are equally important for psychological functioning and whether these goal adjustment abilities interact and can enhance or deplete one another (Dunne, Wrosch, & Miller, 2011; Thompson et al., 2011). In contrast to our study, a recent study of Dunne et al. (2011) emphasized the benefits of goal disengagement for the well-being of older adults and questioned the direct benefits on goal reengagement, although their results showed significant associations of goal reengagement with lower concurrent and future levels of depression (Dunne, Wrosch, & Miller, 2011). In line with our findings, they also did not find a significant interaction between goal disengagement and reengagement in predicting changes in depressive symptoms. These inconsistent findings warrant more longitudinal research on the possible unique benefits of goal disengagement and reengagement in specific circumstances, the possible buffer effect of goal reengagement in the association of goal disengagement with psychological well-being. Another explanation for the association of goal adjustment with psychological functioning could be that improved psychological functioning is beneficial for increases in goal adjustment capacities, rather than the other

way around. Future longitudinal studies should examine the causal relationships between them.

Changes in goal adjustment capacities were not found to be significantly associated with changes in fatigue. This finding is in line with a recent cross-sectional study on people with polyarthritis, in which they found that neither goal disengagement nor goal reengagement was related to fatigue (Arends, Bode, Taal, & Van de Laar, 2013). A possible explanation could be that fatigue is one of the most common and hard to relieve symptoms reported by cancer patients (Berger, Gerber, & Mayer, 2012; Kuhnt et al., 2009; Teunissen et al., 2007; Stone, Richards, A'Hern, & Hardy, 2000), which is supported by current findings that changes in fatigue were only small compared to medium sized changes in depressive and anxiety symptoms. Up till now, the underlying mechanisms on the occurrence and persistence of fatigue among cancer patients are still not clear (Berger et al., 2012; Bower et al., 2000).

About a quarter of patients reported a decrease in goal disengagement or reengagement in the nine-month period of receiving psychosocial care. Decreases in goal adjustment may reflect both maladaptive and adaptive processes. A decrease in goal disengagement may not only mean that patients have more difficulties to rightfully reduce effort and commitment from unattainable goals, but may also indicate that patients adaptively do not withdraw effort too quickly from unattainable goals (Henselmans et al., 2011). Similarly, it can be reasoned that it might be adaptive to scale back in goal reengagement and the striving for new goals, as an attempt to find a better balance in limited energy resources and active goal pursuit. Although we found that in general, greater increases in goal reengagement were related to greater decreases in depressive

and anxiety symptoms, it is also possible that there are distinct subgroups of patients that differ with respect to the meaning and benefits of goal reengagement for psychological functioning. Future studies are needed to examine possible moderators of the association of goal adjustment with psychological functioning.

When interpreting these results, several limitations need to be considered. Firstly, as this study lacked a control group, we cannot be sure to what extent the changes in goal adjustment and psychological symptoms can be attributed to the psychosocial care patients received. Secondly, patients in this study received various types of psychosocial care, which reflects general practice but makes it more difficult to relate our findings to a certain psychological intervention. A third limitation is that goal adjustment and symptoms were measured at the same time points. Therefore, we could not examine the causal direction of the association of goal adjustment with symptoms. Fourth, we used a self-report measure of goal adjustment without assessing actual goal disturbances and specific nature of the changes in goals. Future research could extend our findings by using a more comprehensive approach to collect information about actual goal disturbances, the content and level of goals, and specific (mal)adaptive goal adjustment strategies (i.e., generate new goals, scale back goals in the same life domain). Lastly, it is unknown to what extent these findings can be generalized to other cancer patients. We focused on a heterogeneous sample of cancer patients seeking and receiving various types of psychosocial care. It might be possible that other factors such as natural adaptation and possible other received types of care (i.e., physical care for fatigue) outside the participating institutions could affect the processes.

This study is the first longitudinal study examining the associations of *changes* in goal adjustment capacities (i.e. goal disengagement and goal reengagement) and *changes* in symptoms of depression, anxiety, and fatigue over time among a large sample of cancer patients receiving standard psychosocial care. Our findings add to the ongoing theoretical debate about the differential benefits of goal disengagement and goal reengagement and their stability over time, with findings clearly showing that capacities for goal adjustment may change over time, as well as the benefits of goal reengagement for cancer patients' psychological functioning.

It would be premature to conclude at this point that interventions should be developed to promote goal reengagement in cancer patients, as the causal relationship between improved goal adjustment and psychological functioning could not be established and also little is known about which factors promote or impede the enhancement of goal adjustment. If future research can address these issues and demonstrate that it is indeed the enhancement of goal adjustment that leads to improved psychological functioning rather than the other way around, programs can be developed to assist cancer patients in finding new, meaningful, attainable goals in life.

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Accepted Manuscript

Table 1. Demographical and medical characteristics of participants (N=241)

		Percentage(N)
Age	Mean (SD)	51.39 (10.6)
(in years)	Range	25 – 79
Time since diagnosis	Mean (SD)	3.29 (5.72)
(in years)	Range	1 - 36
Gender	Male	19.9% (48)
	Female	80.1% (193)
Relationship	Yes	79.7% (192)
	No	19.1% (46)
	Missing	1.2% (3)
Educational Level	Low	17.4% (42)
	Middle	32.0% (77)
	High	49.0% (118)
	Missing	1.7% (4)
Cancer type	Breast cancer	45.6% (110)
	Digestive System cancer	7.1% (17)
	Lung cancer	2.9% (7)
	Hematologic cancer	8.7% (21)
	Head and Neck cancer	6.2% (15)
	Gynecological cancer	5.8% (14)
	Multiple malignant tumors	7.9% (19)
	Others	14.9% (36)

	Missing	0.8% (2)
Type of medical treatment	Operation	15.8% (38)
	Chemotherapy	8.3% (20)
	Radiotherapy	2.1% (5)
	Operation + Chemotherapy	20.7% (50)
	Operation + Radiotherapy	17.0% (41)
	Chemotherapy + Radiotherapy	5.4% (13)
	Operation + Chemotherapy + Radiotherapy	24.5% (59)
	Other treatment	6.2% (15)
	Recurrence	Yes
Type of received psychosocial care	Individual therapy (with/without other therapy)	60.2% (145)
	Group therapy (with/without other therapy)	9.5% (23)
	Individual therapy + Group therapy (with/without other therapy)	22.8% (55)
	Only other therapy	1.2% (3)
	Missing	6.2% (15)
Psychosocial care finished at T2	Yes	46.5% (112)

Table 2. Mean scores, standard deviations, range of scores and change scores between T1 and T2 on indicators of functioning (N=241)

	T1			T2			Change T1-T2	
	Mean	SD	Range	Mean	SD	Range	t	Effect size
Goal disengagement	10.91	3.08	4-20	11.58	2.94	5-19	3.30**	0.22
Goal reengagement	20.99	3.69	6-30	21.31	3.32	8-30	1.26	0.09
Depressive symptoms	15.33	8.17	0-39	10.23	7.85	0-43	-9.36***	0.65
Anxiety symptoms	14.33	3.54	6-24	12.31	3.41	6-24	-8.74***	0.58
Fatigue symptoms	35.69	12.39	8-56	31.51	12.46	8-56	-5.54***	0.34

Note: \*p < .05; \*\*p < .01; \*\*\*p < .001

Table 3. Pearson correlation tables of study variables (N = 241)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. T1 Goal disengagement	-														
2. T1 Goal reengagement	.24**	-													
3. T1 Depressive symptoms	-.16*	-.23**	-												
4. T1 Anxiety symptoms	-.27**	-.28**	.65**	-											
5. T1 Fatigue symptoms	-.12	-.10	.45**	.44**	-										
6. T2 Goal disengagement	.49**	.10	-.19**	-.15*	-.22**	-									
7. T2 Goal reengagement	.18**	.42**	-.29**	-.26**	-.25**	.32**	-								
8. T2 Depressive symptoms	-.12	-.21**	.47**	.37**	.38**	-.26**	-.45**	-							
9. T2 Anxiety symptoms	-.13*	-.21**	.47**	.49**	.39**	-.26**	-.48**	.74**	-						
10. T2 Fatigue symptoms	-.06	-.14*	.25**	.23**	.57**	-.09	-.31**	.59**	.50**	-					
11. ΔGoal disengagement T1-T2	-.54**	-.15*	-.01	.14*	-.07	.47**	.13*	-.11	-.11	-.01	-				
12. ΔGoal reengagement T1-T2	-.07	-.61**	-.02	.06	-.09	.19**	.47**	-.19**	-.18**	-.10	.26**	-			
13. ΔDepressive symptoms T1-T2	.04	.03	-.55**	-.29**	-.08	-.06	-.15*	.49**	.24**	.30**	-.10	-.16*	-		
14. ΔAnxiety symptoms T1-T2	.14*	.08	-.20**	-.53**	-.06	-.11	-.20**	.35**	.48**	.26**	-.25**	-.24**	.53**	-	
15. ΔFatigue symptoms T1-T2	.07	-.03	-.21**	-.22**	-.46**	.13	-.05	.23**	.12	.47**	.07	-.01	.42**	.34**	-

Note: \*\*. Correlation is significant at the 0.01 level (2-tailed).

\*. Correlation is significant at the 0.05 level (2-tailed).

Table 4. Hierarchical regression analysis between change in goal adjustment and change in depression and anxiety

Predictors	$\Delta$ Depressive symptoms		$\Delta$ Anxiety symptoms	
	T1-T2		T1-T2	
	Beta	$\Delta R^2$	Beta	$\Delta R^2$
Step 1		.33***		.32***
Psychosocial care finished at T2	-0.14*		-0.16**	
T1 Goal disengagement	-0.03		0.02	
T1 Goal reengagement	-0.11		-0.10	
T1 Outcome	-0.57***		-0.55***	
Step 2		.10***		.12***
Psychosocial care finished at T2	-0.09		-0.12*	
T1 Goal disengagement	-0.06		-0.05	
T1 Goal reengagement	-0.37***		-0.35***	
T1 Outcome	-0.65***		-0.60***	
$\Delta$ Goal disengagement T1-T2	-0.09		-0.15*	
$\Delta$ Goal reengagement T1-T2	-0.37 ***		-0.37***	

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