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Benefit finding trajectories in cancer patients receiving psychological care: Predictors and relations to depressive and anxiety symptoms

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4Centre for Psycho-Oncology, Helen Dowling Institute, Bilthoven, the Netherlands
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6Department of Psychology Health & Technology, University of Twente, Enschede, the Netherlands

Objectives. This study aimed to (1) identify benefit finding trajectories in cancer patients receiving psychological care; (2) examine associations of benefit finding trajectories with levels of and changes in psychological symptoms; and (3) examine whether socio-demographic and medical characteristics distinguished trajectories.

Design. Naturalistic longitudinal study design.

Methods. Participants were 241 cancer patients receiving psychological care at specialized psycho-oncological institutions in the Netherlands. Data were collected before starting psychological care, and three and 9 months thereafter. Latent class growth analysis was performed to identify benefit finding trajectories.

Results. Five benefit finding trajectories were identified: ‘high level-stable’ (8%), ‘very low level-small increase’ (16%), ‘low level-small increase’ (39%), ‘low level-large increase’ (9%), and ‘moderate level-stable’ (28%). People in distinct benefit finding trajectories reported significant differential courses of depression but not of anxiety symptoms. Compared with the other four trajectories, people in the ‘low level-large increase’ trajectory reported the largest decreases in depression over time. Perceptions of cancer prognosis distinguished these trajectories, such that people with a favourable prognosis were more likely to belong to the ‘high level-stable’ trajectory, while people perceiving an uncertain prognosis were more likely to belong to the ‘low level-large increase’ trajectory of benefit finding.
Conclusions. Cancer patients showed distinct benefit finding trajectories during psychological care. A small proportion reporting a large increase in benefit finding were also most likely to show decreases in depressive symptoms over time. These findings suggest a relation between perceiving benefits from cancer experience and improved psychological functioning in cancer patients receiving psychological care.

Statement of contribution

What is already known on this subject?

- People vary in course of benefit finding (BF) after trauma, with some experiencing enhanced BF and others decreased BF.
- Empirical studies have identified subgroups of cancer patients with distinct BF trajectories.

What does this study add?

- This is the first study showing that cancer patients followed different BF trajectories during psychological care.
- Only a small proportion experienced clinically meaningful increases in BF over time.
- More attention is needed for cancer patients with decreased BF, as they are at a higher risk of remaining depressed.

Cancer patients may not only experience negative psychological outcomes (e.g., depressive and anxiety symptoms), but also positive psychological outcomes (e.g., changes in life priorities, and increased appreciation of life) (Brix et al., 2013; Danhauer et al., 2013; Schroevers, Kraaij, & Gamefiski, 2011). In previous studies, these positive changes have been described using various terms, such as post-traumatic growth (Tedeschi & Calhoun, 2004), stress-related growth (Park, Cohen, & Murch, 1996), and benefit finding (Affleck & Tennen, 1996). Because benefit finding seems to be the broadest term, this study used this term to encompass the range of positive changes reported by cancer patients.

Tedeschi and Calhoun (2004) suggest that benefit finding (which they referred to as post-traumatic growth) is the result of actively struggling with and cognitively processing stressful life events and that it evolves over time as individuals become more able to process the stressors. Longitudinal studies in cancer patients have found that benefit finding develops soon after cancer diagnosis and increases in the first year after diagnosis (Danhauer et al., 2013; Liu, Wang, Wang, Su, & Wang, 2014; Manne et al., 2004).

Calhoun and Tedeschi (2004) proposed that people may vary in the course of benefit finding after trauma, postulating that some people may experience a sustained and enhanced benefit finding, while others may experience a decreased benefit finding. However, as previous studies mainly examined overall changes in benefit finding, there is little empirical research examining different courses of benefit finding. Recently, two studies have examined trajectories of benefit finding in cancer patients. In a study of women with breast cancer, four benefit finding trajectories were found over the 12 months after surgery: high stable, high decreasing, low increasing, and low decreasing (Wang, Chang, Chen, Chen, & Hsu, 2014). In a second study of women with breast cancer that examined the period of 24 months following diagnosis, six benefit finding trajectories were found: three stable groups with different levels of benefit finding, two groups with modest increases, and one group with large increases in benefit finding (Danhauer et al., 2015). It is noted the latter study did not identify a group showing decreased benefit finding over time.
Although the trajectories of benefit finding are not identical, these two studies suggest
the existence of distinct subgroups of cancer patients with differential courses of benefit
finding over time. Up until now, to our knowledge, no study has examined benefit finding
trajectories of people in receipt of psychological care. Four studies have examined benefit
finding in the context of psychosocial interventions, specifically finding that cognitive-
behavioural stress management interventions lead to an increase in benefit finding, even
though the interventions are not designed to increase benefit finding (Antoni et al., 2001,
2006; McGregor et al., 2004; Penedo et al., 2006). Those studies, however, examined
group-level changes in benefit finding. Psychological care could lead to increases in
benefit finding for some individuals, but certainly not all. There is a need to examine
whether there are distinct trajectories of benefit finding among cancer patients during
psychological care.

Tedeschi and Calhoun (2004) perceive benefit finding as an outcome independent
from psychological functioning; however, many studies have examined links of benefit
finding to psychological outcomes and presented inconsistent findings. In a meta-analysis
of mainly cross-sectional studies, benefit finding was associated with fewer depressive
symptoms and more positive well-being, was associated with more intrusive and avoidant
thoughts about the stressor, and was unrelated to anxiety, global distress, and quality of
life (Helgeson, Reynolds, & Tomich, 2006). The two studies on benefit finding trajectories
in women with breast cancer also presented mixed findings regarding the association of
benefit finding trajectories with psychological symptoms. One study found that women
with stable high benefit finding reported less depression and anxiety and higher positive
affect at 12 months after surgery than the low increasing group and the high decreasing
group (Wang et al., 2014). The second study found that women in the lowest level of
benefit finding trajectory reported the fewest baseline depressive symptoms compared to
the other trajectories (Danhauer et al., 2015). However, neither of these studies
examined the links of benefit finding trajectories to dynamic changes in psychological
symptoms.

Provided that distinct benefit finding trajectories can be identified and that those
trajectories are related to the course of psychological symptoms, it is also important to
better understand the characteristics of people with different trajectories of benefit
finding. The previously noted meta-analysis showed that benefit finding was more
common among women, non-White individuals, and younger people (Helgeson et al.,
2006). The two studies that examined trajectories of benefit finding in women with breast
cancer also identified several variables that distinguished the trajectories. One study found
that women with breast cancer who showed moderate-to-high stable levels of benefit
finding were more likely to be non-White, younger, and receiving chemotherapy
(Danhauer et al., 2015). Another study found that women with breast cancer who were in
the ‘high decreasing’ and ‘high stable’ benefit finding trajectory groups were more likely
to be younger and highly educated (Wang et al., 2014).

To increase the external validity and clinical relevance of the current study, hereby
reflecting the heterogeneity of patients in real clinical practice, a naturalistic study design
was conducted on cancer patients receiving psychosocial care. In sum, the first aim was to
identify trajectories of benefit finding in cancer patients receiving psychological care over
a 9-month period, beginning prior to the start of psychological treatment. Based on the
previous findings (Danhauer et al., 2015; Wang et al., 2014) and given the context of
psychological care, we expected to observe trajectories with different levels of benefit
finding (low or high) as well as a trajectory with increases in benefit finding. The second
aim was to examine whether benefit finding trajectories were associated with the levels of
and changes in depressive and anxiety symptoms. It was hypothesized that the trajectories characterized by increased benefit finding would be associated with decreases in depressive and anxiety symptoms over time. The third aim was to examine whether benefit finding trajectories can be distinguished by socio-demographic and medical factors. Specifically, age, gender, education, marital status, cancer type, time since cancer diagnosis, receiving active medical treatment or not, disease severity (i.e., perceived prognosis, metastases, and cancer recurrence), and type and duration of psychological care were examined as predictors. Given the mixed findings of previous studies, this study did not have specific hypothesis regarding this aim.

Method

Participants and procedure
Participants were cancer patients who sought help at one of the seven specialized psycho-oncology institutions in the Netherlands between September 2008 and March 2010. When patients sought psychological care at one of these institutions, they were provided with information about the current research. Inclusion criteria were as follows: (1) diagnosed with cancer and seeking help, (2) older than 18 years, and (3) able to complete questionnaires in Dutch.

A total of 611 persons were contacted about this study, and 524 agreed to participate and provided written informed consent. The 87 people who declined did not differ significantly from the 524 people who consented with respect to age or gender. Of the 524 people, only 384 completed the baseline assessment before psychological care (T1), because 123 people dropped out (reasons including not the target population, no further intake, and other unknown reasons), nine did not complete the baseline measurement, and eight changed their minds about undergoing psychological care. There were no significant differences in age or gender between the 384 participants and the 140 non-participants. Of the 384 people, 278 (72%) completed the second assessment after 3 months (T2), and 241 (63%) completed the third assessment after 9 months (T3). Compared to those 241 people, the 143 dropouts were less educated, more likely to be male, more likely to have an unfavourable prognosis, and less likely to have received an operation (p < .05). There were no significant differences in baseline levels of benefit finding or depressive and anxiety symptoms between the 241 people and the 143 dropouts. The analysis was conducted in those 241 people, of whom 26 missed the T2 measurement. As the analyses could be performed despite missing data, these 26 people were included.

Measures

Socio-demographic and medical characteristics
These characteristics (e.g., age, educational level, cancer type, perceived prognosis) were assessed via self-report questionnaire at T1.

Psychological care
At T2 and at T3, participants reported what type of psychological care they were receiving. Psycho-oncology institutions offered the following different types of psychological care: individual therapy, group therapy, and other therapy (e.g., haptonomy).
Regardless of whether participants were receiving one of these other therapies, they were classified into four categories: individual, group, individual and group, or only other.

**Benefit finding**

The ‘perceived benefits’ subscale of the Illness Cognition Questionnaires for chronic diseases was administered at T1, T2, and T3 (Evers et al., 2001). The 6-item perceived benefits subscale measures the extent to which people perceive benefits from disease. A sample item is ‘I have learned a great deal from my illness’. Each item can be answered on a 4-point scale ranging from 1 (‘not at all’) to 4 (‘completely’). Total score ranges from 6 to 24, with higher scores indicating greater perceived benefit. The perceived benefits subscale has good validity and reliability (Evers et al., 2001). In this study, Cronbach’s \( \alpha \) coefficients ranged from .87 to .88.

**Psychological functioning**

Depressive symptoms were measured with the 16-item version of the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). This version was found to be a valid measure of depressive symptoms in cancer patients (Schroevers, Sanderman, Van Sonderen, & Ranchor, 2000). A sample item is ‘I felt depressed’. Items were answered on a 4-point scale ranging from 0 (<1 day) to 3 (5–7 days). Total score ranges from 0 to 48, with higher scores indicating greater depression. For the 16-item CES-D, good reliability and validity were reported in cancer patients (Schroevers et al., 2000). In this study, Cronbach’s \( \alpha \) coefficients ranged from 0.88 to 0.91.

Anxiety symptoms were measured with the 6-item version of the State-Trait Anxiety Inventory (STAI) (Marteau & Bekker, 1992). A sample item is ‘I am confused’. Items are answered on a 4-point scale ranging from 1 (‘not at all’) to 4 (‘very much’). Total score ranges from 6 to 24, with higher scores indicating higher anxiety. This version of the STAI has been found to have good reliability and validity (Marteau & Bekker, 1992). In this study, Cronbach’s \( \alpha \) coefficients ranged from 0.84 to 0.86.

**Statistical analysis**

To identify trajectories of benefit finding (Aim 1), a latent class growth analysis (LCGA) with robust maximum-likelihood estimation was performed in Mplus 7.1 (Muthén & Muthén, 1998-2012). This study tested LCGA models that ranged from one to six classes. First, statistical criteria were checked: Bayesian information criterion (BIC), Akaike information criterion (AIC), entropy, bootstrap likelihood ratio test (BLRT), and Vuong–Lo–Mendell–Rubin likelihood ratio test (VLMR). The BIC and AIC are measures of the relative fit of different models, and lower BIC and AIC indicate a better fit. A model with a higher entropy (at least 0.6) is considered to have better class separation (Nylund, Asparouhov, & Muthén, 2007). Significant BLRT and VLMR indicate that the ‘K classes’ model is better than the ‘K-1 classes’ model (Jung & Wickrama, 2008; Nylund et al., 2007). Second, non-statistical criteria were used to select a model. The addition of one class (>5% of sample; Nylund et al., 2007) should represent a class that is different from other classes in the model with fewer classes. Each participant was assigned to a trajectory based on the latent class posterior distribution of the selected model.

To examine relations between benefit finding trajectories and the changes in psychological symptoms (Aim 2), a repeated-measures ANOVA was conducted on
depressive and anxiety symptoms. If a significant trajectory group-by-time interaction effect was found, two follow-up analyses were conducted. First, ANOVAs were performed to examine whether benefit finding trajectories were related to levels of psychological symptoms at each time. Second, repeated-measures ANOVAs were performed to describe changes in psychological symptoms over time within each trajectory.

To identify the predictors of benefit finding trajectories (Aim 3), chi-square tests and ANOVAs were used to compare the trajectory groups on each variable.

**Results**

**Participants’ characteristics**

Socio-demographic, medical, and psychological care characteristics of the 241 participants are shown in Table 1. Mean age was 51.39, approximately 80% were women, and 50% were highly educated. Almost half of the patients were diagnosed with breast cancer, and around half of the participants had received individual psychological therapy.

We examined average changes in benefit finding and psychological symptoms in the total sample. Mean scores of benefit finding, depressive symptoms, and anxiety symptoms at T1, T2, and T3 are shown in Figure 1. Benefit finding increased significantly over time, mainly from T1 to T2. Symptoms of depression and anxiety decreased significantly over time, showing mainly moderate decreases from T1 to T2.

**Identification trajectories of benefit finding**

As shown in Table 2, the BIC suggested that a 4-class model was the best, whereas the AIC favoured a 6-class model. However, the significant BLRT and VLMR indicated that a 5-class model was better than a 4-class model, and the non-significant BLRT and VLMR showed that a 6-class model was not better than a 5-class model. Furthermore, a 5-class model had the highest entropy, indicating it had the best class separation. In addition, for a 5-class model, the smallest group contains a substantial number of the total sample (8%). Therefore, a 5-class model was chosen to represent benefit finding trajectories.

We performed the same analysis in those 205 patients with complete data. Similarly, a 5-class model was found to be best. This model reflected the same five trajectories of benefit finding as examined in the full sample. The class size (38%, 30%, 15%, 9%, and 8%) was also comparable to the model in the full sample (39%, 28%, 16%, 9%, and 8%). Thus, missing data did not impact the results of model selection.

The parameter estimates for the 5-class model are shown in Table 2. Mean levels of benefit finding for each trajectory group are shown in Figure 1a. Class 1 ('high level-stable group', 8%) started out with a high level of benefit finding at T1 and remained relatively stable in benefit finding from T1 to T3. Class 2 ('very low level-small increase group', 16%) and Class 3 ('low level-small increase group', 39%) started out with very low and low levels of benefit finding at T1, respectively, but then showed small increases in benefit finding from T1 to T2 which stabilized through T3. Class 4 ('low level-large increase group', 9%) started out with a low level of benefit finding at T1 and reported large increases in benefit finding between T1 and T2, and remained at a high level of benefit finding until T3. Class 5 ('moderate level-stable group', 28%) started with a moderate level of benefit finding at T1 and remained almost stable from T1 to T3.
Table 1. Socio-demographic, medical, and psychosocial care characteristics of the total sample and each benefit finding trajectory

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Total sample</th>
<th>Class 1</th>
<th>Class 2</th>
<th>Class 3</th>
<th>Class 4</th>
<th>Class 5</th>
<th>ANOVA/χ²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td></td>
</tr>
<tr>
<td>Age (in years)</td>
<td>51.39 (10.61)</td>
<td>49.11 (11.81)</td>
<td>53.36 (9.67)</td>
<td>51.35 (9.76)</td>
<td>55.95 (7.93)</td>
<td>49.67 (12.16)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Years after diagnosis</td>
<td>3.29 (5.72)</td>
<td>3.56 (5.37)</td>
<td>2.79 (4.31)</td>
<td>2.78 (4.63)</td>
<td>2.78 (6.48)</td>
<td>4.34 (7.43)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Gender (% woman)</td>
<td>80.0%</td>
<td>88.9%</td>
<td>79.5%</td>
<td>78.1%</td>
<td>73.7%</td>
<td>82.6%</td>
<td>n.s.</td>
</tr>
<tr>
<td>Relationship (% with relationship)</td>
<td>80.7%</td>
<td>77.8%</td>
<td>76.9%</td>
<td>86.2%</td>
<td>84.2%</td>
<td>75.0%</td>
<td>n.s.</td>
</tr>
<tr>
<td>Educational level, %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>17.7</td>
<td>11.1</td>
<td>25.6</td>
<td>18.3</td>
<td>31.6</td>
<td>10.3</td>
<td>n.s.</td>
</tr>
<tr>
<td>Middle</td>
<td>32.5</td>
<td>44.4</td>
<td>15.4</td>
<td>35.5</td>
<td>26.3</td>
<td>36.8</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>49.8</td>
<td>44.4</td>
<td>59.0</td>
<td>46.2</td>
<td>42.1</td>
<td>52.9</td>
<td></td>
</tr>
<tr>
<td>Cancer type, %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast</td>
<td>46.0</td>
<td>55.6</td>
<td>53.8</td>
<td>48.4</td>
<td>31.6</td>
<td>39.7</td>
<td>n.s.</td>
</tr>
<tr>
<td>Digestive system</td>
<td>7.1</td>
<td>16.7</td>
<td>5.1</td>
<td>7.4</td>
<td>0.0</td>
<td>7.4</td>
<td></td>
</tr>
<tr>
<td>Lung</td>
<td>2.9</td>
<td>0.0</td>
<td>2.6</td>
<td>3.2</td>
<td>10.5</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Haematologic</td>
<td>8.8</td>
<td>11.1</td>
<td>2.6</td>
<td>10.5</td>
<td>8.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head and neck</td>
<td>6.3</td>
<td>0.0</td>
<td>10.3</td>
<td>7.4</td>
<td>5.3</td>
<td>4.4</td>
<td></td>
</tr>
<tr>
<td>Gynaecological</td>
<td>5.9</td>
<td>5.6</td>
<td>7.7</td>
<td>3.2</td>
<td>5.3</td>
<td>8.8</td>
<td></td>
</tr>
<tr>
<td>Multiple malignant tumours</td>
<td>15.1</td>
<td>5.6</td>
<td>10.3</td>
<td>13.7</td>
<td>31.6</td>
<td>17.6</td>
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<tr>
<td>Others</td>
<td>7.9</td>
<td>5.6</td>
<td>7.7</td>
<td>6.3</td>
<td>5.3</td>
<td>11.8</td>
<td></td>
</tr>
<tr>
<td>Under medical treatment (% yes)</td>
<td>49.8</td>
<td>43.8</td>
<td>63.6</td>
<td>44.3</td>
<td>60.0</td>
<td>49.3</td>
<td>n.s.</td>
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<tr>
<td>Perceived prognosis, %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favourable</td>
<td>50.8</td>
<td>82.4</td>
<td>43.6</td>
<td>56.3</td>
<td>36.8</td>
<td>43.5</td>
<td>χ² = 16.42</td>
</tr>
<tr>
<td>Unfavourable</td>
<td>12.1</td>
<td>11.8</td>
<td>20.5</td>
<td>7.3</td>
<td>10.5</td>
<td>14.5</td>
<td>p &lt; .05</td>
</tr>
<tr>
<td>Uncertain</td>
<td>37.1</td>
<td>5.9</td>
<td>35.9</td>
<td>36.5</td>
<td>52.6</td>
<td>42.0</td>
<td></td>
</tr>
<tr>
<td>Metastases (% yes)</td>
<td>31.9</td>
<td>11.1</td>
<td>33.3</td>
<td>29.0</td>
<td>31.6</td>
<td>40.6</td>
<td>n.s.</td>
</tr>
<tr>
<td>Recurrence (% yes)</td>
<td>14.1</td>
<td>11.1</td>
<td>17.9</td>
<td>11.5</td>
<td>10.5</td>
<td>17.4</td>
<td>n.s.</td>
</tr>
<tr>
<td>Comorbid disease (% yes)</td>
<td>25.2</td>
<td>11.1</td>
<td>18.4</td>
<td>28.4</td>
<td>31.6</td>
<td>26.5</td>
<td>n.s.</td>
</tr>
</tbody>
</table>

Continued
Table 1. (Continued)

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Total sample</th>
<th>Class 1</th>
<th>Class 2</th>
<th>Class 3</th>
<th>Class 4</th>
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<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td></td>
</tr>
<tr>
<td>Type of psychological care (T1–T2), %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual</td>
<td>58.5</td>
<td>50.0</td>
<td>51.3</td>
<td>58.3</td>
<td>68.4</td>
<td>62.3</td>
<td>n.s.</td>
</tr>
<tr>
<td>Group</td>
<td>8.3</td>
<td>5.6</td>
<td>17.9</td>
<td>6.3</td>
<td>10.5</td>
<td>5.8</td>
<td></td>
</tr>
<tr>
<td>Individual + Group</td>
<td>14.5</td>
<td>22.2</td>
<td>7.7</td>
<td>13.5</td>
<td>21.1</td>
<td>15.9</td>
<td></td>
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<tr>
<td>Other</td>
<td>2.1</td>
<td>0.0</td>
<td>2.6</td>
<td>2.1</td>
<td>0.0</td>
<td>2.9</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>16.6</td>
<td>22.2</td>
<td>20.5</td>
<td>19.8</td>
<td>0.0</td>
<td>13.0</td>
<td></td>
</tr>
<tr>
<td>Psychological care finished at T2 (% yes)</td>
<td>22.4</td>
<td>27.8</td>
<td>28.2</td>
<td>20.8</td>
<td>26.3</td>
<td>17.4</td>
<td>n.s.</td>
</tr>
<tr>
<td>Type of psychological care (T2–T3)a, %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual</td>
<td>52.1</td>
<td>53.8</td>
<td>50.0</td>
<td>51.3</td>
<td>57.1</td>
<td>52.6</td>
<td>n.s.</td>
</tr>
<tr>
<td>Group</td>
<td>4.3</td>
<td>7.7</td>
<td>3.6</td>
<td>3.9</td>
<td>7.1</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>Individual + Group</td>
<td>23.9</td>
<td>23.1</td>
<td>14.3</td>
<td>25.0</td>
<td>21.4</td>
<td>28.1</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1.6</td>
<td>7.7</td>
<td>0.0</td>
<td>2.6</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>18.1</td>
<td>7.7</td>
<td>32.1</td>
<td>17.1</td>
<td>14.3</td>
<td>15.8</td>
<td></td>
</tr>
<tr>
<td>Psychological care finished at T3 (% yes)</td>
<td>46.5</td>
<td>61.1</td>
<td>46.2</td>
<td>38.5</td>
<td>52.6</td>
<td>52.2</td>
<td>n.s.</td>
</tr>
</tbody>
</table>

Note. aAs 77.6% of study population (n = 187) were receiving psychological care at T2, types of psychological care from T2 to T3 were reported by the 187 people.
Association of benefit finding trajectories with psychological symptoms

We examined the course of depressive and anxiety symptoms across distinct trajectories of benefit finding (Figure 1b–c). Patients with distinct benefit finding trajectories reported differential courses of depressive symptoms \([F_{\text{time} \times \text{group}} (7.62, 382.81) = 2.39, p < .05]\), but did not report differential courses of anxiety symptoms \([F_{\text{time} \times \text{group}} (7.49, 374.61) = 1.10, \text{n.s.}]\).

For depressive symptoms, we examined the changes in depressive symptoms from T1 to T3 at each trajectory group and the differences among the trajectories in the levels of

Figure 1. Observed levels of (a) benefit finding, (b) depressive symptoms, and (c) anxiety symptoms at each benefit finding trajectory group over time. Note. \(d\) refers to Cohen’s \(d\). [Colour figure can be viewed at wileyonlinelibrary.com]
depressive symptoms at each point in time. Regarding the changes in depressive symptoms over time, the two groups with small increases in benefit finding from T1 to T2 (Class 2 ‘very low level-small increase’, and Class 3 ‘low level-small increase’) reported small-to-moderate decreases in depressive symptoms in the same time period [for Class 2, $F(2, 66) = 3.45, p < .05, d = .51$; for Class 3, $F(2, 156) = 23.26, p < .001, d = .87$]. The group with the largest increases in benefit finding (Class 4 ‘low level-large increase’) reported the largest decreases in depressive symptoms in the same period of time [$F(1.38, 23.38) = 12.89, p < .001, d = 1.26$]. The group with stable high benefit finding (Class 1 ‘high level-stable’) maintained stable low levels of depressive symptoms [$F(2, 28) = 1.06, p > .05, d = .38$], whereas the group with stable moderate benefit finding (Class 5 ‘moderate level-stable group’) reported small decreases in depressive symptoms [$F(2, 118) = 8.91, p < .001, d = .40$].

Regarding the differences in the levels of depressive symptoms among trajectories, the ANOVAs showed that the levels of depressive symptoms significantly differed between the distinct benefit finding trajectories at all points in time [at T1: $F(4, 231) = 5.16, p < .01$; at T2: $F(4, 208) = 4.61, p < .01$; and at T3: $F(4, 233) = 3.79, p < .01$]. The mean levels of depressive symptoms at each trajectory at each time point are shown in Figure 1b. Trajectories characterized by higher levels and with large increases in benefit finding (i.e., Class 1 ‘high level-stable’, Class 4 ‘low level-large increase’, and Class 5 ‘moderate-stable’) were associated with fewer depressive symptoms across time.

### Table 2. Latent class growth modelling selection and parameter estimates for the selected model

<table>
<thead>
<tr>
<th>No. of classes</th>
<th>BIC</th>
<th>AIC</th>
<th>Entropy</th>
<th>BLRT</th>
<th>VLMR</th>
<th>Class prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3,985.58</td>
<td>3,964.67</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>3,771.55</td>
<td>3,736.71</td>
<td>0.77</td>
<td>235.97***</td>
<td>235.97***</td>
<td>51% 49%</td>
</tr>
<tr>
<td>3</td>
<td>3,710.29</td>
<td>3,661.50</td>
<td>0.77</td>
<td>83.21***</td>
<td>83.21**</td>
<td>26% 46% 28%</td>
</tr>
<tr>
<td>4</td>
<td>3,702.36</td>
<td>3,639.63</td>
<td>0.77</td>
<td>29.87***</td>
<td>29.87</td>
<td>21% 34% 10% 35%</td>
</tr>
<tr>
<td>5</td>
<td>3,705.49</td>
<td>3,628.83</td>
<td>0.80</td>
<td>18.80***</td>
<td>18.80**</td>
<td>8% 16% 39% 9% 28%</td>
</tr>
<tr>
<td>6</td>
<td>3,716.04</td>
<td>3,625.43</td>
<td>0.76</td>
<td>11.40ns</td>
<td>11.40ns</td>
<td>8% 15% 7% 34% 28% 8%</td>
</tr>
</tbody>
</table>

Parameter estimates for the selected 5-class model

<table>
<thead>
<tr>
<th>Class</th>
<th>Intercept $M$ (SE)</th>
<th>Slope $M$ (SE)</th>
<th>Quadratic $M$ (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>21.91 (0.91)***</td>
<td>0.17 (0.40)</td>
<td>−0.01 (0.04)</td>
</tr>
<tr>
<td>2</td>
<td>8.55 (0.40)***</td>
<td>0.57 (0.20)**</td>
<td>−0.04 (0.02)</td>
</tr>
<tr>
<td>3</td>
<td>12.78 (0.37)***</td>
<td>0.65 (0.24)**</td>
<td>−0.05 (0.02)*</td>
</tr>
<tr>
<td>4</td>
<td>12.55 (0.66)***</td>
<td>2.65 (0.50)***</td>
<td>−0.21 (0.04)***</td>
</tr>
<tr>
<td>5</td>
<td>17.91 (0.34)***</td>
<td>0.51 (0.19)**</td>
<td>−0.05 (0.02)**</td>
</tr>
</tbody>
</table>

Note. SE = standard error.

*p < .05; **p < .01; ***p < .001.

Predictors of benefit finding trajectories

As shown in Table 1, perceived cancer prognosis was the only factor that distinguished benefit finding trajectories ($p < .05$). It was shown that the majority of those people in the
high stable group (Class 1 ‘high level-stable’) reported a favourable prognosis, whereas the majority of those in the low level-large increasing group (Class 4 ‘low level-large increase’) reported an uncertain prognosis.

Discussion
This is the first study to identify benefit finding trajectories in cancer patients receiving psychological care. Five distinct benefit finding trajectories were identified: ‘high level-stable’ (8%), ‘very low level-small increase’ (16%), ‘low level-small increase’ (39%), ‘low level-large increase’ (9%), and ‘moderate level-stable’ (28%). Mixed findings were reported concerning relationships between benefit finding trajectories and psychological symptoms: People with distinct benefit finding trajectories reported differential courses of depressive symptoms, but not of anxiety symptoms. Compared with the other four trajectories, people with the ‘low level-large increase’ trajectory reported the largest decreases in depressive symptoms during psychological care. None of the examined socio-demographic and medical or care characteristics were predictive of the distinct trajectories of benefit finding, except for patients’ perceptions of their prognosis. People perceiving a favourable prognosis were more likely to report stable high levels of benefit finding throughout the course of receiving care, whereas people with an uncertain prognosis were more likely to report a large increase in benefit finding.

When having a close look at the five benefit finding trajectories, it can be observed that there are three main patterns of change over time, with most cancer patients showing a gradual increase in change over time. More than half of people (i.e., ‘very low level-small increase’ group and ‘low level-small increase’ group: 55%) showed only a small increase in benefit finding over time (a rather stable course of benefit finding), with people in these two trajectories mainly differing in their absolute levels of benefit finding. Another two groups (‘high level-stable’ group and ‘moderate level-stable’ group: 36%) reported a moderate and a high level of benefit finding at baseline and remained almost stable over time. Only a small group (i.e., 9%) started with a low level of benefit finding and reported a large increase in benefit finding. It should be noted that this latter class was not revealed in models with fewer classes.

There are two studies examining benefit finding trajectories in cancer patients (Danhauer et al., 2015; Wang et al., 2014). Generally, our findings are more in line with the findings of Danhauer et al. (2015) in women with breast cancer over 24 months after diagnosis, as their six benefit finding trajectories exhibited three similar patterns (i.e., stable, moderate increases, and large increases). Interestingly, their study and the current study both found a small group of cancer patients reporting impressive increases in benefit finding over time. In contrast, the other trajectory study found two stable groups and two groups with decreased benefit finding, but no increase group (Wang et al., 2014). Given that the Danhauer study and our study were conducted in a different culture than the Wang study (Western versus Eastern culture), it seemed that a Western culture might promote people finding benefits after cancer than an Eastern culture. Yet, due to the lack of cross-cultural studies comparing benefit finding across cultures, this issue still needs to be examined.

Overall, these findings are consistent with previous findings in cancer patients receiving psychological care, in which only small-to-moderate average increases in benefit finding were observed (Antoni et al., 2006; Penedo et al., 2006). The present findings add to these studies by revealing a subgroup of patients that does report a great improvement in benefit finding. Findings confirm the assumption of Tedeschi and Calhoun (2004) and
provide empirical evidence for the differential processes of benefit finding over time in cancer patients. This warrants further research into the distinct trajectories of benefit finding in survivors of other types of trauma.

Patients with distinct benefit finding trajectories reported differential courses of depressive, but not anxiety symptoms. This indicates that the process of benefit finding is somewhat independent of the process of anxiety symptoms, as compared to depressive symptoms. The courses of depressive symptoms showed similar but opposite patterns to the five trajectories of benefit finding. This could be explained by the reciprocal relations between benefit finding and depressive symptoms (Milam, 2006). On the one hand, the presence of depressive symptoms usually comes together with less joy and more negative thoughts, which may impede the development of benefit finding. On the other hand, the process of benefit finding may protect against the development of depressive symptoms. In this study, the relations between benefit finding trajectories and changes in depressive symptoms should be interpreted as cross-sectional comparisons over the same period. Therefore, it is difficult to draw a firm conclusion regarding the precise causal sequence. One possible explanation is that changes in benefit finding precede changes in depression. Another possible explanation is that changes in depression precede changes in benefit finding and that changes in key symptoms of depression (including hopelessness) open new perspectives and lead to the identification of benefits related to the disease. Yet, with the design of this study, it is difficult to examine causal sequence between benefit finding and depression. Future intervention research with a control group is needed to closely examine this issue.

Compared to people in other trajectories, those people with consistently high or large increases in benefit finding reported fewer depressive symptoms after three and 9 months. This is consistent with findings from people with breast cancer in that those with stable high benefit finding reported less future depression than the other trajectories (Wang et al., 2014). These findings suggest that the development and maintenance of benefit finding are associated with better psychological functioning. Notably, theoretical models do not substantially consider the adaptive effect of benefit finding on psychological functioning. For example, Tedeschi and Calhoun (2004) propose that benefit finding and psychological functioning are independent of each other. As such, benefit finding does not necessarily relate to improved psychological functioning. The present findings are contradictory to this supposition, as this study suggests a clear association between benefit finding and psychological functioning.

Perceived cancer prognosis was the only factor that significantly differentiated benefit finding trajectories. Most patients who exhibited a large increase in benefit finding had an uncertain prognosis. This is consistent with the theories of Tedeschi and Calhoun (2004), assuming that a search for benefit is provoked by a severe and threatening trauma that is crucial enough to challenge one’s own beliefs and assumptions about the world (Tedeschi & Calhoun, 2004). As for cancer patients, those with a more severe form of cancer are often confronted with a higher likelihood of mortality and prolonged medical treatments, which are likely to facilitate benefit finding (Stanton, Bower, & Low, 2006).

Previous studies also found that women with breast cancer reporting relatively high levels of benefit finding tended to be younger (Danhauer et al., 2015; Wang et al., 2014). In our study, we did not find age as a significant predictor of benefit finding trajectories. Yet, patients with stable high levels of benefit finding tended to be younger, which is similar to previous studies. The non-significant findings of our study might have been resulted from the relatively small sample size of this study. Future studies with a larger
sample size are needed to further examine the predictive value of these factors for benefit finding trajectories.

The findings of this study should be interpreted with caution due to several limitations. First, the current measure of benefit finding makes it difficult to obtain more detailed information regarding various domains of benefit finding such as changes in life priorities and spiritual beliefs (Tedeschi & Calhoun, 2004). Second, the sample size of the current study was relatively small, which might have reduced the power to identify significant predictors of benefit finding trajectories. Currently, there are no formal guidelines for power analysis for LCGA, but large sample sizes are in general recommended. Future studies with larger sample size are needed to examine predictors of benefit finding trajectories. Third, as medical characteristics were collected via self-report questionnaires without collecting objective medical information, this might have caused bias on conclusions regarding the predicting role of medical characteristics on benefit finding trajectories. Finally, the majority of people in the present sample were highly educated, middle-aged females who had been diagnosed with breast cancer and had sought and received psychological care. Although our sample can be considered to be representative of cancer patients seeking psychological care (Nekolaichuk, Cumming, Turner, Yushchysyn, & Sela, 2011), findings may not be generalized to the general cancer population.

Despite these limitations, the present study shows that cancer patients followed different trajectories of benefit finding while receiving psychological care and that only a small proportion experienced clinically meaningful increases in benefit finding and improvements in depression over time. These findings warrant future randomized controlled trials to examine whether benefit finding works as a mechanism of change in psychological therapy as well as the temporal sequence between improved benefit finding and decreased depressive symptoms. Moreover, the current study contributes to the existing literature on benefit finding by demonstrating that not every person derives benefits from cancer when receiving psychological care. Psychologists could pay more attention to people who have difficulties finding benefits from cancer, as these people may be at a higher risk of remaining depressed even receiving psychological care. In addition, this study adds to previous trajectory studies on negative outcomes reported by cancer patients (e.g., distress) and confirms that there are also subgroups of cancer patients with distinct trajectories of positive outcomes over time (Henselmans et al., 2010). This warrants further research on this topic in cancer patients.

**Conflict of interest**

All authors declare no conflict of interest.

**References**


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