Life goal reconstruction for people with chronic health conditions: Feasibility of a brief internet-based writing intervention using a minimally monitored delivery

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ABSTRACT

Examination of people's narratives after significant life changes revealed that engaging in current and future goal reconstruction was associated with higher levels of well-being while a failure to disengage from "what might have been" was associated with lower levels of well-being. This work led to the development of a life goal writing intervention that has received empirical support with most studies conducted among nonclinical populations. This study aims to assess the feasibility of a brief and minimally monitored internet-delivered writing therapy developed to facilitate life goal reconstruction among adults diagnosed with various chronic health conditions. Sixteen adults showing mild to moderate levels of anxiety or depression were recruited and a single group pretest/post-test design used. The 5-week program is comprised of psychoeducation, five weekly 30-min writing sessions, automated emails and symptom monitoring. Feasibility outcome measures included attrition, treatment adherence, acceptability and preliminary effectiveness. Primary outcome measures were The Patient Health Questionnaire -9 (PHQ-9) and the Generalized Anxiety Disorder -7 (GAD-7). Attrition was low (12%) and adherence high (93%). All but one study completer reported they would recommend the program. Mixed effects models revealed a significant and large reduction from pre-treatment to post-treatment on the PHQ-9 and GAD-7 and remission rates of 67% and 64% respectively. These findings suggest that it would be feasible to proceed to a larger trial. The brief duration of the intervention combined to a minimally monitored delivery may lend itself to implementation in routine clinical care milieus such as hospital settings.

1. Introduction

Chronic health conditions are major life events associated with high prevalence rates of anxiety and depression (Demyttenaere et al., 2007; Patten, 2001). Laura A. King and colleagues have studied life goal changes following significant life events using the constructs of lost and found possible selves (King and Patterson, 2000; King and Raspin, 2004). The lost possible self has been conceptualized as a representation of the self that a person would have wanted to pursue, which can be expressed by "if only I had". In contrast, the found possible self involves building new goals and adopting a new representation of one's future following an event. One would then have to let go of the lost possible self (King and Hicks, 2007).

King and colleagues postulated that the lost and found possible selves would relate to subjective wellbeing. To test this hypothesis, they developed two writing tasks for people who had experienced a major life event such as a divorce to describe their lost possible self, i.e., their best possible self before the major life event occurred, the one that was valued and is no longer accessible, and their « found possible self » in their current and future situation i.e., to imagine that their life goals were met and that everything went well (King and Raspin, 2004). Examination of retrospective written narratives revealed that a difficulty to disengage from lost possible selves was associated with lower levels of wellbeing, while focusing on found possible selves was associated with higher levels of wellbeing.

Drawing on Pennebaker and Beall's expressive writing paradigm (Pennebaker and Beall, 1986), King used a similar writing task as an intervention referred to as the Best Possible Self (BPS; King, 2001). A sample of 81 undergraduates was randomly assigned to one of four 20-min writing tasks performed over four consecutive days including BPS. Compared to the other writing conditions, the BPS writing task produced a significant increase in positive mood post-writing and five months

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post-writing, as well as a significant decrease in illness-related visits to a health centre compared to the control writing condition. King (2001)'s BPS writing task has since been used widely and figures among several positive psychology interventions (PPIs). Literature reviews and meta-analyses of PPIs have shown small to moderate improvements in negative affect, depressive symptoms and psychological wellbeing when BPS was used either as part of an intervention package or on its own with gains maintained at follow-ups of three to six months (Bolier et al., 2013; Carrillo et al., 2019; Sin and Lyubomirsky, 2009). Similar findings were found whether PPIs were delivered in person or online (Loveday et al., 2016).

Most studies on BPS have, however, been conducted among nonclinical populations. A few studies suggest that BPS used in combination with other PPIs may also be helpful among clinical populations including outpatients and primary care patients experiencing mild to moderate depressive symptoms (Lambert D'raven et al., 2015; Pietrowsky and Mikutta, 2012), inpatients with suicidal ideation (Huffman et al., 2014) and patients with chronic health conditions including cardiac disease, diabetes and pain-related illnesses (Gibson et al., 2021; Huffman et al., 2011; Molinari et al., 2018; Müller et al., 2016; Peters et al., 2017). Among the latter studies, all but one were offered remotely primarily through the internet using a minimally monitored model of delivery, i.e., a term coined by Robichaud et al. (2020) to refer to a model with no clinician contact in which procedures such as a screening process and supportive emails are used to promote patient engagement.

In relation with diabetes, a study including a qualitative trial ($N = 20$) followed by an exploratory quantitative trial ($N = 50$) was conducted to assess whether a tailored-for-diabetes version of the BPS writing task centered on glycemic control could improve diabetes self-management (Gibson et al., 2021). While no significant impact was observed on diabetes self-management behaviors, a significant increase in perceived diabetes self-care was found at a 4-week follow-up compared to a waitlist group. Among acute cardiac patients, the feasibility of an 8-week telephone-based PPI focusing on gratitude, kindness and optimism was assessed among 30 participants randomized to PPI, an active control group (meditation) or an attentional control group (list of events) (Huffman et al., 2011). Two BPS exercises were part of the PPI. Participants were instructed to think about their relationships and imagine their ideal life five years in the future in terms of those relationships. They were also instructed to imagine that everything related to their physical and mental health had gone as well as it possibly could have for the next five years. While no significant between-group differences were reported given the small sample, small to moderate effect sizes (Cohen's d from 0.19 to 0.68) were found in the PPI group on outcome variables including depression and happiness.

Three randomized controlled trials (RCTs) evaluated the impact of PPIs among pain patients. In a first trial, 96 patients with chronic pain secondary to different physical disabilities were randomized to an 8-week computer-based PPI or control group (Müller et al., 2016). The PPI was tailored to participants' interests and involved completing 4 weekly exercises out of 10 possible exercises focusing on different topics such as gratitude, kindness, savoring and optimism. The exercise designed to promote optimism was a BPS task consisting of writing about best possible future selves and goals, identifying barriers and automatic pessimistic thoughts and ideas to minimize their impact. Participants in the control group were instructed to write about weekly events or activities. Significant within-group improvements in positive affect, depression, pain intensity, pain control, pain catastrophizing and pain interference were found post-treatment in the PPI group with gains maintained at a 2.5-month follow-up. Post-treatment improvements in pain intensity and pain control were significantly superior in the PPI group than the control group.

In another RCT, the specific impact of a BPS writing task was assessed among 71 chronic pain patients diagnosed with fibromyalgia who were randomized to a one-month internet-based BPS condition or a Daily Activity control condition (Molinari et al., 2018). The BPS exercise

consisted of a 25-minute face-to-face session during which participants were instructed to write about their future best possible self considering personal, social, professional and health domains. Images, sounds and videos could be included, and participants were instructed to visualize their future best possible self three times a week for three weeks as well as during a 1-month and 3-month follow-up. The Daily Activity condition involved for participants to write down everything that they had done over the past 24 h. As for the experimental group, a visualization component was included. Compared to the control condition, the BPS group showed significantly higher post-treatment improvements in depression, positive affect, and self-efficacy. Between-group differences were not found on disease-related variables or when comparing pre-treatment to a 3-month follow-up. The researchers hypothesized that the activity for the control group may have acted as a behavioral activation intervention contributing to a lack of between-group differences.

In a large RCT, the efficacy of an 8-week internet-delivered PPI (iPPI) including a BPS task was assessed among 276 musculoskeletal pain adults (Peters et al., 2017). No clinical guidance was offered but brief telephone and e-mail support was provided by psychology graduate students. The iPPI focused on self-compassion, positive emotions, and optimism. In the BPS writing task, participants were instructed to imagine a good life in the future despite their pain in consideration of different life domains (e.g., family life, social life, professional life) and daily visualization of what they imagined over two weeks. Compared to a waiting list, intent-to-treat analyses revealed that iPPI produced gains comparable to an established internet-delivered CBT for pain, with both conditions leading to significant improvements in depression and happiness and gains maintained at a 6-month follow-up. Clinically significant gains were also reported for depression and anxiety for both iPPI and iCBT compared to the waitlist.

Overall, findings from the above studies suggest that PPIs offered remotely and including a BPS component may be of value to reduce symptoms of depression and anxiety and promote psychological wellbeing and positive illness-related outcomes among people presenting a chronic health condition. This study aims to assess the feasibility of a brief internet-based life goal reconstruction intervention, the *Destination* program, targeting people presenting varied chronic health conditions. Contrary to BPS interventions assessed so far, the program is based on both the lost and found possible selves. We postulated that moving from the lost possible self to the found possible self would promote illness acceptance as well as post-traumatic growth while reducing anxiety and depression. No such study had yet been conducted. We also wanted to develop a brief intervention and use a minimally monitored delivery so that the program would lend itself to implementation in routine clinical care milieus such as hospital settings. This type of delivery may overlap with the structure of clinician-guided programs and explain that similar treatment outcomes can be obtained (Andersson and Titov, 2014). Feasibility outcomes were treatment adherence, attrition, treatment acceptability and the program's preliminary effectiveness on anxiety and depression. Secondary outcomes included the potential impact of the program on post-traumatic growth, positive and negative affect, self-compassion, optimism, disease-related cognitions and life satisfaction. It was hypothesized that a majority of participants would (1) complete the five writing sessions of the *Destination program*; (2) report a high level of satisfaction with the program and (3) show significant improvements in anxiety and depression. The impact of the program on the other outcome variables was assessed on an exploratory basis.

2. Material and methods

2.1. Ethics

The study was approved by the Human Research Ethics Committee of the Université de Moncton (New Brunswick, Canada), file number 1516-078. All participants provided informed consent electronically.

2.2. Participants

Participants were recruited over two months among the general population of New Brunswick, Canada, using various media. Several associations for chronic health conditions agreed to post the study on their Facebook page. Advertisements were placed on bulletin boards of the provincial health networks (in print and electronically). Several support groups of people with a chronic health condition were contacted and informed their members of the study or allowed face-to-face appeals. Emails were also sent to the Université de Moncton' students and employees. People showing an interest in rebuilding their lives as a result of having a chronic health condition were directed to a secure web platform (www.etherapies.ca) to complete an application. Candidates could participate in the language of their choice (English or French). The inclusion criteria were: (1) to be 18 or older; (2) to reside in New Brunswick, Canada; (3) to have access to the internet; (4) to have been diagnosed with a chronic health condition other than chronic pain for at least 3 months or to have been suffering from chronic pain for more than 6 months[1] (5) to minimally show a mild level of depression ($\geq$ 5 on the PHQ-9) or anxiety ($\geq$ 5 on the GAD-7); (6) to self-report a difficulty in accepting one's chronic health condition. The exclusion criteria were: (1) having a terminal illness; (2) a change of medication for anxiety or depression in the past month; (3) undergoing psychotherapy at the time of the study; (4) severe symptoms of depression (PHQ-9 > 20) or anxiety (GAD-7 > 20) or suicidal thoughts (score of 3 to item 9 of the PHQ-9); (5) self-reported cognitive problems significantly affecting memory or comprehension.

Candidates meeting the eligibility criteria received an email informing them of their status and a link to the consent form and pretest questionnaires. Once the questionnaires were completed, the research coordinator (second author) contacted participants by telephone to review the study procedures and answer their questions before starting the intervention. Participants were asked to provide the name and telephone number of a relative or family doctor in the event of an emergency. Applicants who did not meet the eligibility criteria received an email thanking them for their interest in the study and including a list of mental health resources. Twenty-six participants were eligible to participate in the study and 16 were included in the analyses. Participant flow is presented in Fig. 1. The mean age was 41 (SD = 12.1, range = 19 to 62) and all but one participant were women (93.8%). The most frequently reported chronic health condition was fibromyalgia (n = 6; 37.5%) followed by diabetes (n = 4; 25%). The mean duration of participants' chronic health condition was 9.1 years (SD = 10.2, range = 1 to 32). Table 1 presents the sociodemographic and mental health-related characteristics of the participants.

2.3. Measures

2.3.1. Primary outcome measures

Treatment adherence was defined as the percentage of participants who completed all five writing tasks of the *Destination* program. Attrition was assessed using the percentage of participants who did not complete the post-test outcome measures. Treatment acceptability was assessed using two yes/no questions (Would you recommend the intervention *Destination* to a friend or family member experiencing stress or low mood?); (2) Was the intervention *Destination* worth your time?) (Titov et al., 2013). In a post-treatment telephone interview, open-ended questions were also used to inquire about how participants found the program, what was the most and least helpful to them and suggestions for future uses of the program.

Preliminary treatment effectiveness was assessed using self-report questionnaires with good psychometric properties. They were administered online using the software Ninja Forms through the platform *etherapies* and offered in English and French. Pretreatment Cronbach's alphas are reported for each measure. French-Canadian versions of the Self-Compassion Scale and Illness Cognition Questionnaire were translated using a forward-backward translation method.

Patient Health Questionnaire-9 (PHQ-9; Kroenke et al., 2001, translation by MAPI Research Institute). Nine-item measure of the symptoms and severity of depression based on the DSM-IV diagnostic criteria for major depression. Respondents indicate how much they have been bothered by the symptoms using a rating scale from 0 (not at all) to 3 (nearly every day) (α = 0.72).

Generalized Anxiety Disorder -7 (GAD-7; Spitzer et al., 2006, translation by MAPI Research Institute). Seven-item measure of the symptoms and severity of general anxiety based on the DSM-IV diagnostic criteria for generalized anxiety disorder. Items are rated on a scale from 0 (not at all) to 3 (nearly every day) (α = 0.91).

2.3.2. Secondary outcome measures

Positive and Negative Affect Schedule (PANAS; Watson et al., 1988; French adaptation by Bouffard et al., 1997): Measure comprised of two 10-item scales assessing positive and negative affect using a rating scale from 1 (very slightly or not at all) to 5 (very much) (α = 0.94 and 0.90 respectively).

Post-traumatic Growth Inventory (PTGI; Tedeschi and Calhoun, 1996, French-Canadian adaptation by Cadell et al., 2015): 21-item measure of positive outcomes following a traumatic event in five domains: relations to others, perception of new possibilities, personal strength, spiritual change and appreciation of life. The term Crisis/Disaster in the instructions was replaced by Illness/Pain. Items are scored on a rating scale from 0 (I did not experience this change as a result of my illness/pain) to 10 (I experienced this change to a very great degree as a result of my illness/pain) (α = 0.94).

Self-Compassion Scale – Short Form (SCS-SF; Raes et al., 2010; French-Canadian translation by the first author): 12-item measure of three components of self-compassion when going through difficult times: self-kindness, common humanity and mindfulness. Participants are asked to indicate how often they have behaved in the stated manner when going through difficult times on a rating scale from 1 (almost never) to 5 (almost always) with higher scores representing higher levels of self-compassion (α = 0.85).

Life Orientation Test – Revised (LOT-R; Scheier et al., 1994; French-Canadian adaptation by Trottier et al., 2008): 10 items assessing trait-like optimism comprised of three positively worded, three negatively worded and four filler items rated on a 5-point scale (0 = strongly disagree; 4 = strongly agree). An optimism score is calculated by summing the scores of the three positively worded items plus the reversed scores of the three negatively worded items (α =0.91).

Illness Cognition Questionnaire (ICQ; Evers et al., 2001; French-Canadian translation by the first author): 18-item measure comprised of three subscales assessing illness-related cognitions in relation with helplessness, acceptance and perceived benefits, i.e., perceived positive long-term consequences of the disease. The level of agreement with each item is rated on a scale from 1 (not at all) to 4 (completely) and the scores summed for each of the scales (α =0.69 for acceptance, α =0.80 for perceived benefits and α = 0.84 for helplessness).

Satisfaction with Life Scale (SWLS; Diener et al., 1985; French-Canadian adaptation by Blais et al., 1989). Five-item measure of respondents' overall satisfaction with their life. Agreement with each item is rated on a scale from 1 (strongly to disagree) to 7 (strongly agree) with higher scores indicating higher satisfaction with life (α = 0.95).

2.4. Procedure

A single group pre-post treatment protocol was used. The therapy

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[1] The definition of chronic pain based on its duration has varied across studies (Steingrímsdóttir et al., 2017). We opted to use a more restrictive timeframe of 6 months, the transition from acute to chronic pain having been identified at that time by several experts (e.g., Turk and Okifuji, 2001).

Enrollment	Assessed for eligibility (n = 41)

Excluded (n = 25)
- Did not meet inclusion criteria (n = 16)
  - Not living in New Brunswick (n = 1)
  - End-stage disease (n = 1)
  - Absence of a chronic health condition (n =2)
  - Changes in medication intake (n = 4)
  - Following a cognitive therapy (n = 3)
  - Significant memory problems (n = 14)
  - Severe anxiety (GAD-7 > 20 (n = 4)
  - Severe depression (PHQ-9 > 20) (n = 8)
- Incomplete pretest (n = 9)

Allocation

Started the intervention (n = 16)

Lost to post-treatment (n = 2)
Discontinued intervention (n = 1)

Adherence to treatment
- 100% completed week 1
- 100% completed week 2
- 94% completed week 3
- 94% completed week 4
- 94% completed week 5

Analysis

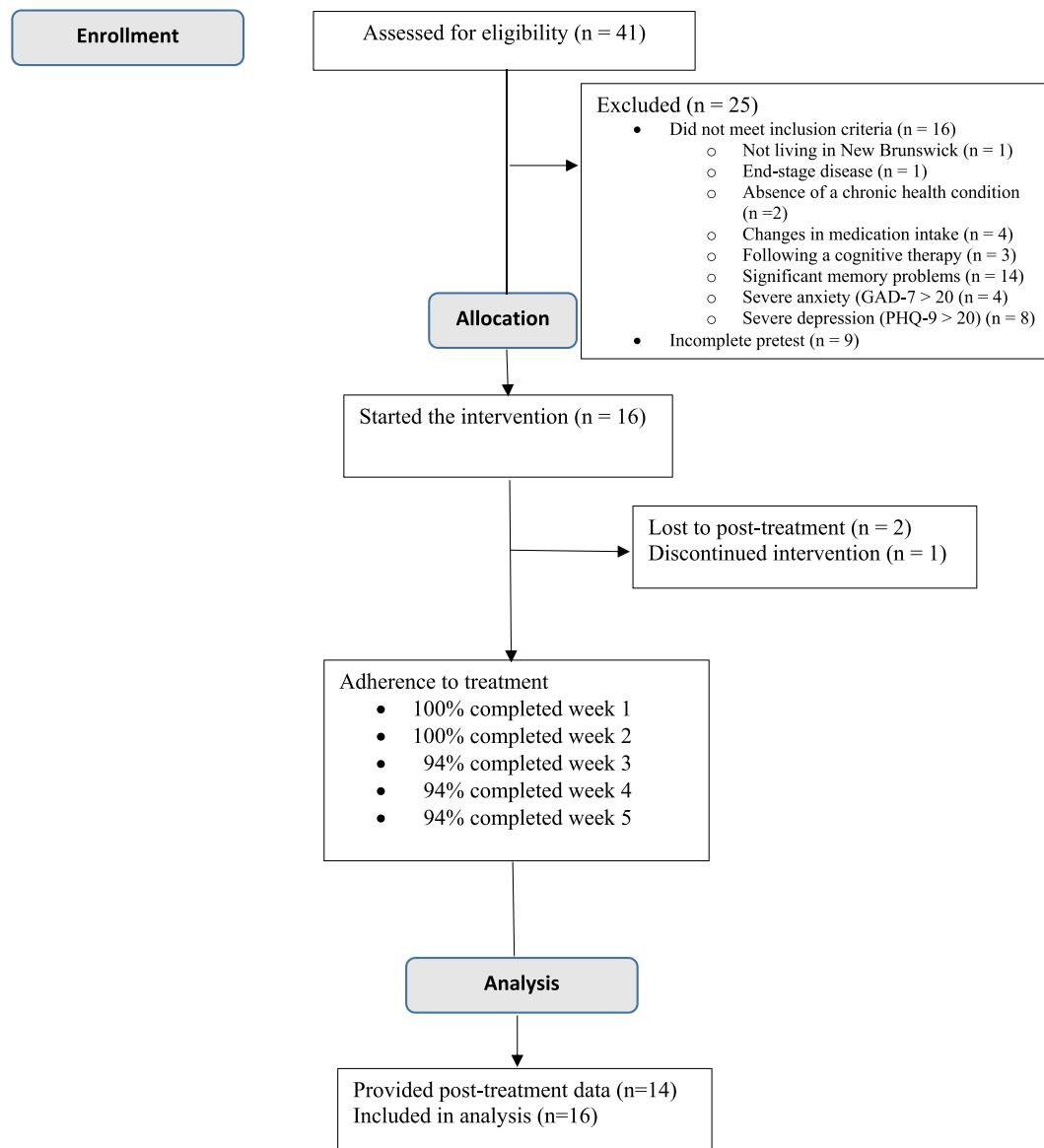Provided post-treatment data (n=14)
Included in analysis (n=16)

Fig. 1. Participant flow chart.

program was provided through the platform *www.etherapies.ca*. Presented like an online course, *Destination* was delivered using the software *Moodle* hosted on a secure server by *Accra Solutions Inc*. Access to the website was username and password protected and the intervention available in either English or French. A minimally monitored model of delivery involving brief pre- and post-treatment telephone interviews, weekly automated emails, weekly symptom monitoring and a safety protocol was used. Automated weekly emails were sent to participants using an established email protocol.[2] Emails were delivered using an encrypted email account and were personalized using participants' first name. They aimed to provide (1) downloadable instructions on the writing task; (2) reminders; (3) reinforcement of progress; (4) normalization of challenges. All texts were reviewed by the research coordinator to monitor adherence to the treatment protocol. The telephone interview pre- and post-treatment allowed to review study procedures, answer questions and get feedback on the intervention. Participants' levels of anxiety and depression were monitored on a weekly basis using the GAD-7 and PHQ-9 and a safety protocol was put in place (see Titov et al., 2013, for more).

2.5. Intervention

The program *Destination* is a 5-week self-guided internet-delivered intervention comprised of psychoeducation and weekly 30-minute writing sessions on life goal reconstruction post-illness based on the constructs of lost and found possible selves (King and Raspin, 2004). The program was developed using a structure similar to internet-based CBT programs developed in Australia using a case-enhanced learning approach.[3] Psychoeducation and additional material (e.g., list of pleasant activities, worksheet on goal setting and inspiring TED talks) were provided as well. The selected case-enhanced learning approach consists of having participants follow clinically inspired stories of a fictional man and woman who struggled to adapt to their chronic health condition and successfully followed the program. These case stories aimed to validate people' struggles, to inspire them and to illustrate how

Table 1
Participant demographic characteristics and mental health-related variables.

Variable	n	%
Sex		
Man	1	6.3
Woman	15	93.8
Age		
Mean (years)	41	
Range (years)	19-62	
Marital status		
Married	6	37.5
Common law	2	12.5
Single	4	25
Separated/divorced	2	12.5
Widow	2	12.5
Education		
Secondary	4	25.5
College	7	43.8
University	5	31.5
Occupation		
Full time worker	6	37.5
Full time student	2	12.5
Maternity leave	1	6.3
Sick leave	2	12.5
Stay at home	1	6.3
Retired	2	12.5
Unemployed	2	12.5
Annual income		
Less than 25,000$	3	18.8
25,000$ à 49,999$	2	12.5
50,000$ à 74,999$	3	18.8
75,000$ à 99,999$	3	18.8
100,000$ or more	5	31.3
Previously diagnosed with a mental disorder	7	43.8
Previously received mental health services	11	68.8
Currently taking a psychotropic drug	4	25.0

to go about the writing tasks to reconstruct their life goals by letting go of their lost possible self and finding a current and future possible self. Elements of self-compassion were embedded in the life goals tasks to facilitate their completion. For example, in Week 2, participants were instructed to write about their current and future life goals, hopes and dreams from the perspective of an unconditionally loving imaginary friend. Self-compassion has been found to reduce post-event processing, a form of negative and repetitive thinking among socially anxious individuals (Blackie & Kocovsky, 2018). As such, it may promote self-distancing, or the capacity to step back from situations and to think about them from the perspective of a distanced observer, which may in turn facilitate adaptive self-reflection and life goal reconstruction (Hope et al., 2014; Kross & Ayduk, 2011). Goal setting exercises were also part of the program to further encourage behavioral change. The final writing task was inspired by a task used by van der Houwen et al. (2010) and aimed to promote relapse prevention. Participants were asked to describe to the compassionate friend they imagined in Week 1 how they were able to overcome obstacles to reach their life goals. Each of the five sessions included specific instructions pertaining to the writing task (see Table 2 for a description of all sessions).

2.6. Statistical and clinical significance

Mixed effects models were used to assess treatment outcomes. Comprised of fixed and random effects, such models allow for dependence between the observations such as in within-subject designs and offer unbiased estimates of missing data under the assumption that data are missing at random (Brauer and Curtin, 2018; Tabachnick and Fidell, 2013). Mixed effects models with an autoregressive covariance structure and using maximum likelihood estimation were identified as the best way to analyze the primary and secondary clinical outcomes. Primary analyses were conducted based on data obtained from the GAD-7 and PHQ-9 at pre-treatment, on a weekly basis during the intervention and at

Table 2
Content of weekly writing sessions.

Session	Content
1	Information was provided on chronic health conditions, their prevalence and impact. The adaptation process where one goes from a sense of loss to mourning what life was before and what life might have been to the acceptance of the disease and of how reconstructing life goals paves the way to acceptance was explained. This was followed by a description of how writing can help to give meaning to the loss, to find a direction in life and to reconstruct one's life goals, dreams and hopes. Participants were given general instructions about the writing sessions (e.g., to write in a quiet and private setting, to keep track of time and to write without paying attention to grammar, spelling, etc.). Two characters were introduced, Mike and Carole, who briefly share their story throughout the program. Participants were instructed to write on the life that they imagined for themselves before they were diagnosed with a chronic condition, on the sorts of things they hoped for and dreamt about.
2	Participants were instructed to write about their current and future life goals, hopes and dreams from the perspective of an unconditionally loving imaginary friend; to think and write about what this friend would say to them about the life that they can imagine for themselves currently and in the future.[a]
3	Participants were instructed to write about their current and future life goals, hopes and dreams, this time from one's own perspective using "I statements". Instructions were also provided to identify specific life goals and a list of pleasant activities and longer term activities and life goals given.
4	Participants were instructed to prioritize their life goals and to identify concrete steps to achieve their short-term goals.
5	Participants were instructed to imagine themselves in the future and to write to their compassionate imaginary friend, the one from Session 2, about how they managed to overcome obstacles and to achieve their life goals, dreams and hopes.

[a] Adapted with the permission of K. Neff.

post-treatment. Pairwise comparisons were used to contrast the estimated means for the different time points. Secondary analyses were based on data obtained at pre-treatment and post-treatment for all secondary outcome measures. Little's test showed that data on outcome measures were missing completely at random ($\chi2$ (163) = 0.28, $p <$ .001). Effect sizes (Cohen's *d*) were calculated based on the estimated means. Correlations between repeated measures were not entered in the calculations since they can overestimate effect sizes (Dunlap et al., 1996). The clinical significance of the results was assessed using an index of remission and of recovery. The index of remission was the changes in the number of cases pre- to post-treatment based on the clinical cut-off scores of the GAD-7 ($\geq$ 8) and PHQ-9 ($\geq$ 10). The index of recovery was operationalized as the proportion of participants who showed a 50% and over reduction of their symptoms on the GAD-7 and PHQ-9. The number of cases showing deterioration, defined as post-treatment scores five or more points higher compared to pre-treatment, was also evaluated.

3. Results

3.1. Attrition and adherence

Post-treatment data were available for 14 participants (87.5%). As shown in Fig. 1, all but one participant completed all five writing sessions (*n* = 15; 93.8%).

3.2. Acceptability

In response to the treatment satisfaction questions, 93% (*n* = 13/14) of study completers reported that they would recommend the program *Destination* to a friend and indicated that the program was worth their time. A majority of participants completed the post-treatment telephone interview (*n* = 11/16; 69%). Nearly half of them mentioned that the program was "an eye opener", that it helped them to "step back", that it made them realize they had accomplished more and could do more

activities than they thought or that it gave them a new appreciation for what they had ($n = 5/11$; 45%). About a third of the participants reported finding the program positive and enjoyable and that they liked that the writing was focusing on life goals and not so much on the illness itself ($n = 4/11$; 36%). Several ($n = 3/11$; 27%) reported the second writing task, which is about current and future life goals, hopes and dreams as imagined by a compassionate friend, helped them the most. Two participants indicated their intention to keep a journal following the study ($n = 2/11$; 18%). Only one of the participants mentioned the provision of feedback on the writing tasks as a suggestion for future studies.

3.3. Preliminary treatment effectiveness

Examination of assumptions led to the elimination of two outliers on the ICQ-A and PTGI.

3.3.1. Primary analyses

Observed and estimated means for the PHQ-9 and GAD-7 are shown in Table 3. Mixed effects models revealed a significant time effect on the PHQ-9 ($F_{6,81.80} = 2.52$, $p = .027$) and the GAD-7 ($F_{6,78.79} = 2.91$, $p = .013$). Pairwise comparisons revealed that PHQ-9 scores reduced significantly from pre-treatment to post-treatment ($p < .001$) as well as from W1, W2 and W3 to post-treatment (p range: 0.001 to 0.034), but not from W4 and W5 to post-treatment ($p = .069$ and 0.454 respectively). Pairwise comparisons also revealed significant improvements on the GAD-7 between pre-treatment and post-treatment ($p < .001$) as well as from W1 and W2 to post-treatment ($p = .001$ and 0.002 respectively), but not between W3, W4, W5 and post-treatment (p range: 0.204 to 0.708). Effect sizes from pre-treatment to post-treatment on the PHQ-9 and GAD-7 were large ($d = 1.14$ and 1.42 respectively) and reduced gradually from one week to the next compared to post-treatment (see Table 3).

3.3.2. Secondary analyses

Table 4 shows the observed and estimated means for the secondary outcome measures and effect sizes. Mixed effects models revealed significant improvements from pre-treatment to post-treatment on several outcome measures including the PANAS-PA ($F_{1,14.85} = 7.87$, $p = .013$), PANAS-NA ($F_{1,14.43} = 9.97$, $p = .007$), PTGI ($F_{1,13.17} = 7.50$, $p = .017$), ICQ-H ($F_{1,14.45} = 16.76$, $p = .001$), ICQ-A ($F_{1,13.78} = 12.13$, $p = .004$) and LOT-R ($F_{1,14.69} = 6.95$, $p = .019$). No statistically significant improvements were found on the SCS-SF, ICQ-B and SWLS (p range: 0.059 to 0.477). Effect sizes were moderate for the majority of outcome measures.

3.3.3. Clinical significance and deterioration

At pretreatment, many participants scored in the clinical range on the GAD-7 (68.8%; $n = 11/16$) and the PHQ-9 (75.0%; $n = 12/16$). For anxiety, the percentage of cases scoring in the clinical range decreased

Table 4
Observed and estimated means, standard deviations and effect sizes (Cohen's d) for secondary outcome measures.

Variable	Observed means (SD)		Estimated means (SD)		Effect sizes (based on estimated means)
	T1	T2	T1	T2	
PANAS-PA	25.00 (8.52)	31.07 (9.19)	25.00 (8.52)	30.55 (8.31)	0.66
PANAS-NA	26.44 (8.52)	21.71 (6.91)	26.44 (7.56)	21.99 (7.30)	0.60
PTGI	38.93 (20.74)	55.00 (21.76)	38.93 (20.60)	53.09 (20.16)	0.69
SCS-SF	32.47 (6.60)	35.79 (9.01)	32.47 (7.59)	35.79 (7.56)	0.44
ICQ-H	12.25 (3.26)	14.29 (3.77)	12.25 (3.32)	14.19 (3.18)	0.60
ICQ-A	11.73 (2.37)	14.46 (2.88)	11.73 (2.52)	14.39 (2.49)	1.07
ICQ-B	13.31 (3.55)	14.36 (4.52)	13.31 (3.88)	14.24 (3.89)	0.24
LOT-R	12.38 (6.08)	15.43 (5.92)	12.38 (5.76)	15.27 (5.54)	0.51
SWLS	16.38 (7.55)	20.29 (8.31)	16.38 (7.60)	19.89 (7.41)	0.48

Note. T1 = pretest; T2 = post-test; PANAS-P = Positive Affect and Negative Affect Schedule-Positive Affect; PANAS-N = Positive Affect and Negative Affect Schedule-Negative Affect; PTGI = Post-Traumatic Growth Inventory; SCS-SF = Self-Compassion Scale-Short Form; ICQ-H = Illness Cognition Questionnaire-Helplessness; ICQ-A = Illness Cognition Questionnaire-Acceptance; ICQ-B = Illness Cognition Questionnaire-Perceived Benefits; LOT-R = Life Orientation Test- Revised; SWLS = Satisfaction With Life Scale.

by 63.6% ($n = 11/16$ to $4/16$) while the percentage of cases for depression decreased by 66.7% ($n = 12/16$ to $4/16$). Indices of recovery on the GAD-7 and PHQ-9 were 43.8% ($n = 7/16$) and 50.0% ($n = 8/16$) respectively. None of the participants showed a deterioration and no adverse or negative events due to the intervention were reported.

4. Discussion

This study examined the feasibility of a minimally monitored internet-delivered life goal reconstruction therapy for the treatment of anxiety and depression among people with a chronic health condition. Feasibility outcomes included treatment acceptability, adherence, study attrition and a preliminary assessment of the program's effectiveness. It was hypothesized that a majority of participants would complete the study and the five writing sessions of the program, would report being satisfied with the program and would show improvements in anxiety and depression. These hypotheses were supported.

All but one of the study completers reported that they would recommend the program to a friend and that it was worth their time supporting the acceptability of the program. Positive feedback was

Table 3
Observed and estimated means, standard deviations and effect sizes (Cohen's d) from estimated means for primary outcome measures.

Variable	PHQ-9			GAD-7		
	Observed means (SD)	Estimated means (SD)	Effect size (each time point to post-treatment	Observed means (SD)	Estimated means (SD)	Effect sizes (each time point to post-treatment
Pretest	11.31 (4.03)	11.31 (4.75)	1.14	10.06 (4.71)	10.06 (3.80)	1.42
W1	10.69 (4.67)	10.69 (4.75)	1.00	9.31 (4.54)	9.31 (3.80)	1.23
W2	9.31 (4.57)	9.31 (4.75)	0.70	8.31 (4.17)	8.31 (3.80)	0.97
W3	9.15 (3.89)	8.64 (4.07)	0.65	6.46 (2.73)	6.46 (3.61)	0.51
W4	8.21 (3.26)	7.93 (4.23)	0.48	5.21 (2.01)	5.23 (3.70)	0.18
W5	6.47 (5.48)	6.51 (4.34)	0.16	5.13 (3.72)	5.31 (3.80)	0.20
Post-test	5.79 (5.09)	5.80 (4.56)	–	4.50 (3.52)	4.52 (4.00)	–

Note. W1 to W5 = Week1 to Week 5.

obtained at the post-treatment telephone interview with many participants reporting that they found the program helpful and insightful. The engagement of participants was high as both treatment adherence and study completion rates were elevated. All but one participant completed the 5-week program. The dropout rate (12%) is lower than rates reported in RCTs conducted on minimally monitored internet-delivered PPIs among pain patients with reported post-treatment attrition rates of 25% (Peters et al., 2017) and 39% (Molinari et al., 2018). Participants' sustained engagement in the present study may be the result of the use of a minimally monitored delivery and of the nature of the tasks. Specifically, the BPS task is future-oriented which may be challenging for people with a chronic health condition as they are often fearful of what the future may hold in store for them (Sallinen et al., 2011, as cited in Molinari et al., 2018). In the current study, the BPS task required taking a self-compassionate stance combined with short-term goal setting and working on how one could overcome obstacles. In addition, contrary to previous studies (Molinari et al., 2018; Peters et al., 2017), participants were not instructed to visualize their BPS in between sessions. Visualization can be cognitively challenging for individuals with certain chronic health conditions (Molinari et al., 2018) and has not been found to improve outcomes (Nawrath, n.d.).

The attrition rate in the current study was comparable to the rate reported in an 8-week iCBT program for pain patients that used a similar minimally monitored delivery model (Dear et al., 2015). Treatment adherence, however, was superior in the present study (94% vs 68% respectively). While this may relate to the duration of the program, another potential explanation is that BPS may prevent people from going through the negative emotions associated with other interventions (King, 2001) making it more likely that they will complete treatment. While this was not found to be the case in an RCT in which iPPI was compared to iCBT for chronic pain where similar adherence rates were obtained (Peters et al., 2017), participants' affect following task completion and its impact on acceptability and adherence would be worth exploring further in future studies.

Preliminary effectiveness results suggest that the *Destination* program may reduce anxiety and depression among people living with various chronic health conditions. Significant and large improvements from pre-treatment to post-treatment were found on both the GAD-7 and PHQ-9. The inclusion of weekly outcome data to the mixed effects models revealed that significant changes on the GAD-7 occurred mostly in the first two weeks of the program, although there was a moderate improvement at Week 3. A more gradual decrease was observed in relation with depression. Compared to post-treatment scores, large to moderate weekly improvements on the PHQ-9 were observed until the last week of the program. These findings suggest that Week 5's task, which is focusing on relapse prevention, may not be essential to the management of anxiety and depression among the studied population. However, this task may be important for gains to be maintained over time, which remains to be studied. Another element to be assessed in future studies is to what extent the writing tasks contributed to symptom improvement compared to the other components of the program including psychoeducation and goal setting exercises.

Two studies of a BPS intervention, used either alone or in combination with other PPIs among people with a chronic health condition, included data on the clinical significance of the findings related to anxiety and depression (Molinari et al., 2018; Peters et al., 2017). In the present study, indices of remission, i.e., rates of reduction pre/post in the number of cases of anxiety and depression, were elevated (64% and 67% respectively), and similar to rate obtained by Molinari et al. (2018) for depression (62%). Somewhat higher rates were reported by Peters et al. (2017) for anxiety and depression (80% and 73% respectively). When comparisons were made using the same outcome measures, indices of recovery for depression and anxiety (50% and 44%) compared favorably to rates obtained by Dear et al. (2015) with an internet-delivered pain management program based on principles of CBT and using a clinician-guided approach (46% and 48% respectively). The

statistically and clinically significant improvements in both anxiety and depression suggest that the *Destination* program may have trans-diagnostic value and that a minimally monitored delivery may be efficient for their management. Significant improvements were observed for most secondary positive psychology variables - both general and illness-specific - with moderate effect sizes obtained for most outcome variables. Although a moderate increase was found in self-compassion, improvements were not statistically significant likely due to the small sample size. The elements of self-compassionate writing included in the Destination program may have contributed to these findings. It remains to be seen if similar gains would be obtained if they would not be used. Large improvements in post-traumatic growth were also observed. Research has shown the potential adaptive value of post-traumatic growth among people living with a serious medical illness (Barskova and Oesterreich, 2009). People who report growth must disengage from certain goals while at the same time building new goals (Tedeschi and Calhoun, 2004). This conceptualization shares similarities with the constructs of lost and found possible selves which are personalized representations of meaningful life goals (Markus and Ruvolo, 1989) thereby adding further support to the therapeutic value of these constructs.

Being a feasibility study, this study has several limitations including a small sample, the absence of a control group and lack of follow-up. All outcome measures were self-reported. Physical symptoms and disability were not assessed. BPS interventions may not impact disability but may impact motivation to engage in activities and quality of life around ongoing symptoms (Peters et al., 2017). As such, a measure of life satisfaction may be more meaningful in the case of chronic health conditions management. Although the *Destination* program did not produce a statistically significant increase in life satisfaction, the effect size was moderate even though the duration of the intervention was only of five weeks. Not having measures of physical symptoms or disability to describe the sample does however impact the generalization of the results. Generalization is also limited by the high proportion of women who participated in the study (93.8%) and by the fact that other participant characteristics, such as the ethnicity or the proportion of clients residing in rural areas, were not assessed. As well, the sample was comprised of people who were recruited among the general population using advertisements in different media. It is unclear how the results might generalize to people who present to in-person treatments. A more comprehensive recruitment strategy is recommended in future trials. While clinical levels of depression or anxiety were not an inclusion criterion, the results are nevertheless likely to be of relevance to clinical samples as a majority of participants scored in the clinical range at pre-treatment. It would be informative to examine in a larger study to what extent illness duration may impact outcomes. People who had a more recent onset of their illness (e.g., a year) may still be undergoing grief as opposed to depression and it may be important to distinguish between the two. No deterioration of symptoms was observed, or negative or adverse events reported by the participants during the study or at the post-treatment telephone interview. As the writing process may result in some distress, it may be important to track any such negative event for future safety planning. Lastly, consistent with previous studies of iCBT programs among people with a chronic health condition (e.g., Bendig et al., 2021; Norlund et al., 2018), recruitment was more challenging than anticipated. Notable effort had to be deployed over the 2-month recruitment period. A potential reason may be a focus on somatic symptom management rather than psychological symptoms, which may be seen as stigmatizing (Pols et al., 2018, and Scherer et al., 2007, as cited in Bendig et al., 2021). Another issue pertaining to recruitment is that several candidates who applied reported experiencing significant comprehension and memory problems and as a result were not included in the study. Perhaps this exclusion criterion was too stringent or would benefit from being assessed using a validated measure.

Despite the above noted limitations, findings from this feasibility study are nevertheless positive, and suggest that it would be feasible to

proceed to a RCT. The *Destination* program has several advantages. It is a brief intervention that is easily accessible and may not require clinical guidance for benefits to be realised. The general nature of the program also makes it suitable for use among individuals suffering from different chronic health conditions. Given elevated rates of anxiety and depression in this population, and well-known barriers to accessing mental health services, such an approach and delivery model may hold great promise.

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