Volume 1

Research Component

EMOTIONAL EXPRESSION AND PSYCHOLOGICAL WELLBEING IN CANCER SURVIVORS

by

MICHELLE LISA HASLAM

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Department of Clinical Psychology

School of Psychology

The University of Birmingham

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OVERVIEW

This thesis was submitted as part of the Doctorate in Clinical Psychology at the School of Psychology, University of Birmingham. It consists of two volumes, the first being the research component which includes a review of the literature and an empirical study, and the second being the clinical component which includes five clinical practice reports.

Volume I: Research component

The literature review examines the existing research on written emotional expression interventions for people surviving cancer. There is anecdotal and empirical evidence that written emotional expression tasks are beneficial to psychological wellbeing. The review examines randomised controlled studies which investigate the feasibility, efficacy and moderators of written emotional expression interventions. It was concluded that the studies showed promising results in reducing physical symptoms, reducing pain and enhancing sleep quality and duration, but that in the majority of studies, psychological outcomes were not affected by the interventions. Future research is needed to explore differences between written and verbal expression (therapy) to decipher whether expressive writing interventions are as efficacious as verbal emotional expression. Randomisation of participants to cancer specific and non cancer specific writing groups is also required so that comparisons can be made between cancer specific and non-cancer specific writing groups. Finally, future studies could benefit from further examining moderators of the effects of expressive writing on psychological health outcomes. This paper has been prepared for submission to Psycho-Oncology.

The empirical paper presents a quantitative study that investigates the relationship between attitude towards emotional expression, resilience and psychological wellbeing in cancer survivors. It was hypothesised that those with lower resilience and a more negative attitude towards emotional expression would have poorer quality of life and more psychological symptoms. Participants completed measures of attitude towards emotional expression, resilience, and psychological wellbeing. Results replicate previous findings that psychological resilience is a ‘buffer’ against poor psychological wellbeing. Findings also suggest that the belief that expressing emotions will lead to social rejection predicts poorer resilience and psychological wellbeing in cancer survivors. In addition, interventions which include an aspect of resilience training and address a negative attitude towards emotional expression may be of benefit. Further longitudinal studies are needed to ascertain the links between attitude towards emotional expression, resilience and psychological wellbeing in this population. This paper has been prepared for submission to Psycho-Oncology.

Volume II: Clinical component

The second volume of the thesis consists of five clinical practice reports. Firstly, a case formulation from a cognitive behavioural and a psychodynamic perspective are presented for a 36 year-old woman with bipolar disorder referred to a community mental health team. Secondly, a case study is presented from a compassion focused perspective of a woman with depression and anxiety who had had several bereavements close together. Thirdly, a service evaluation was carried out to assess how a healthy lives group for people with learning disabilities was being received by service users and staff members, and whether it was meeting the guidelines set out by the Walsall Partnership Board. In the fourth report a single case experimental design was used to evaluate the effectiveness of a systematic desensitisation intervention with a young lady suffering from a phobia of frogs. Lastly an abstract is presented for a clinical practice report presentation of a case study of an 18 year old cancer survivor, with whom acceptance and commitment therapy was conducted.

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DEDICATION

My gratitude goes out to all my fellow trainees for sharing the journey with me, and to my family and friends for their positive support throughout training. I would like to dedicate this thesis to all those cancer survivors who I met during my placement at the cancer centre, University Hospital Birmingham, and to those who kindly took part in my research. Finally I would also like to dedicate this thesis to everyone who has been touched by cancer, particularly my late father Jeffrey Maurice Haslam.

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LITERATURE REVIEW

HOW ARE WRITTEN EMOTIONAL EXPRESSION INTERVENTIONS BENEFICIAL FOR PEOPLE WITH CANCER? A SYSTEMATIC REVIEW

Abstract

Objective: This review aims to systematically evaluate empirical literature relating to the efficacy of emotional expression interventions in those with cancer.

Method: A systematic review of the published literature was conducted. Databases searched included Web of Science, PubMed, PsycInfo, and Embase. Only randomised controlled trials examining expressive writing interventions in cancer patients were included. A total of 17 studies consisting of a total of 1755 heterogenous cancer patients were included in this review.

Results: The majority of included studies in this review suggest that expressive writing interventions hold no *psychological* benefits for people with cancer. *Physical health* benefits were found however and these included lower pain ratings, fewer cancer-related doctor's visits and better sleep quality. Results suggest that expressive writing interventions may not be feasible to conduct with palliative care patients. Despite the absence of evidence that expressive writing interventions reduced psychological distress for people with cancer, the authors of these trials continue to argue that expressive writing interventions are 'feasible' and well received by participants.

Discussion: There are several possible reasons that could account for these null findings: 1.) insufficient power, 2.) low rates of depression and anxiety, and high levels of quality of life in study participants, 3.) insufficient differences between expressive writing and neutral writing interventions, 4.) asking participants to write about cancer-related trauma only.

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1. INTRODUCTION

It is estimated that there are over two million people living with or beyond cancer in the UK, and it has been further predicted that this could rise by more than 3% a year (Maddams et al., 2008). These estimates are higher than previous predictions, as both cancer incidence and survival rates continue to rise (Cancer Research UK, 2013). Due to the ageing population, earlier detection of cancer and improvements in treatment, the number of people surviving cancer is expected to continue to rise.

Studies indicate that cancer can have a significant psychological impact, and can lead to or exacerbate difficulties with mental health difficulties such as depression (Lloyd-Williams, 2000; Reich, 2008, Somerset, Stout, Miller & Musselman, 2004), anxiety (Mehnert, Lehmann, Schulte & Koch, 2007; Stark et al. 2002; Welch-McCaffrey, 1985), post-traumatic stress disorder (Hodgkinson et al., 2007; Mehnert & Koch, 2006) and insomnia (Escalante, 2003; Savard et al., 2001). In addition to increasing the risk of meeting the criteria for a mental health difficulty, there are a number of other negative psychosocial outcomes of cancer. Those with cancer are more likely to experience less happiness and optimism (Peled, Carmil, Siboni-Somocha & Shoham-Vardi, 2008). Relationships with significant others can also be adversely affected (Pitceathly & Maguire, 2003), with couples reporting a wide range of constraints such as denial, avoidance and conflict within the relationship (Badr & Taylor, 2005) and more sexual dissatisfaction than the general population (Garos, Kluck, & Aranoff, 2007).

Given the wide range of psychological difficulties documented in cancer survivors, it is accepted that there is a need for psychosocial interventions aimed at improving quality of life in this population (Carlson et al., 2004; Zabora et al., 1997). Results of meta-analyses support the usefulness of psychosocial interventions for improving quality of life in cancer survivors (Rehse & Pukrop, 2003). The expression of emotions has been studied for several years and has formed the basis of many therapeutic interventions, both for those with physical illnesses and those without. Emotional expression has been defined as 'how one conveys emotional experience through both verbal and nonverbal behavior' (Gross, 1998, 1999). Gross argued that emotional expression is an important part of emotion regulation and can affect health outcomes (Gross, 1999). There are two theoretical approaches which have attempted to identify links between emotional expression and health that emerge in the research literature. The 'non-expression' approach argues that inhibiting emotion is harmful to psychological wellbeing and that emotions that are linked to previous traumatic events that have not been expressed can interfere with the individual's ability to cope with future events, and leave them more prone to physical disease (Baikie, 2008; Freud, 1977; Gross & Levenson, 1997; Manning, 2010; Scheff, 1979). The suppression of anger has been related to hypertension and coronary heart disease and an inhibitory style to the development of cancer (Redford and Barefoot, 1988; Temoshok, 1985; Temoshok et al., 1985; Weidner et al., 1989). The 'expression approach', which has been focused on in more recent years, has explored the advantages of emotional expression and found that disclosure of previously unexpressed emotions enhances physical health and emotional wellbeing (Greenberg et al., 1996; Pennebaker, 1993; Pyszcynski et al., 1993).

One such intervention that has been developed to test the theory behind the 'expression approach' is the expressive writing paradigm. Expressive writing interventions (EWI) instruct participants to write down their deepest thoughts and feelings about a life event that is considered stressful (Pennebaker & Beall, 1986). Since James Pennebaker began studying expressive writing in college students in the 1980's, over 200 studies have been conducted in this area. Many randomized controlled trials have been conducted with a range of groups, from people coping with everyday stressors (Barclay & Skarlicki, 2009; Harvey & Farrell, 2003; Mackenzie, Wiprzycka, Hasher & Goldstein, 2007) to events such as natural disasters

(Smyth & Helm, 2003). Findings from such studies mostly found that the experimental group, who wrote about their experiences had a reduction in either physical or psychological symptoms. The first meta-analysis of EWI including healthy participants found a medium overall effect size, with mean weighted effect size across all studies including both physical and psychological outcomes being $d = 0.47$ ($r = .23$) (Smyth, 1998). In samples with physical and psychiatric disorders, more modest effects have been found ($d = 0.19$) (Frisina, Berod & Lepore, 2004). The results of Frisina et al (2004) also illustrated that expressive writing was more effective on physical outcomes ($d = .21$; $p = .01$) than on psychological outcomes ($d = .07$; $p = .17$) ($Qb > 10.83$; $p = .001$).

There are several theories as to why there appears to be both physical and psychological benefits to expressive writing. Craft et al (2013) argue that when a person who has a life-altering experience uses expressive writing, the individual is given the opportunity to reflect on and perhaps see their experiences in a new light (Mezirow, 1987, Pennebaker et al., 1997), and they are also being consciously caring towards themselves (Watson, 2002). This integration leads to ‘transformative actions’ that can result in a decrease in physical and emotional distress. Through reflection on life-altering experiences, meaning is reconstructed and actions that assist with coping are more likely to occur (Craft et al., 2013). According to Frankl (1984), this kind of meaning making is fundamental for critical life events to be resolved positively. Pennebaker and Graybeal (2001) assert that expressive writing gives the individual opportunities to practice social behaviours that can result in a greater feeling of connectedness. The available evidence has both supported and contradicted the above theories, leading researchers to suggest that the mechanism behind expressive writing is probably complex and not accounted for by any particular theory.

There have been several meta-analyses in the last decade that have analysed data from randomised controlled trials of written emotional expression in non-cancer populations (Frisina et al., 2004; Frattaroli, 2006; Harris, 2006; Mogk et al., 2006). While effect sizes were small (0.07-0.21), expressive writing was associated with improvements in physical and psychological health. Results however did not always match the hypotheses made by researchers and there still remains several unanswered questions regarding how exactly written emotional expression is beneficial, who it is most likely to be beneficial for, the most appropriate amount of writing, and how long the benefits are sustained for (Chung & Pennebaker, 2008; Craft et al., 2013; Sexton & Pennebaker, 2009; Sloan, Feinstein & Marx, 2009; Stickney, 2010). This area has been studied extensively however there have been no literature reviews of the studies specific to cancer.

Tamagawa, Garland, Vaska & Carlson (2012) conducted a systematic review of psychological moderators of psychosocial treatment outcomes in cancer patients. They argued that while the moderating roles of baseline depression and anxiety have been explored previously (Naaman et al., 2009; Ross et al., 2002; Schenider et al., 2010; Sheard & Maguire, 1999), none of the literature has explored the role of other psychosocial characteristics as moderators of treatment outcome. According to Baron and Kenny (1986), a moderator is a variable that influences the relationship between independent and dependent variables. Tamagawa et al. (2012) concluded in their review that identifying moderators is one way to understand why there is such variance in the outcomes of psychosocial interventions, and to help researchers identify who is most likely to benefit from such interventions.

This systematic review therefore has two main aims. These are:

1.) To summarise and critique the findings of studies which examine the effectiveness of expressive writing interventions for those with cancer, to determine whether written emotional expression is beneficial in this population, and if so, which outcomes does it affect.
2.) To summarise the findings of these studies which examine moderator variables, in order to help determine who is most likely to benefit from such interventions.

Given the lack of research examining the role of potential moderating variables other than depression and anxiety, like the review by Tamagawa et al. (2012), this systematic review contributes to the increasing literature aimed at identifying which cancer patients will benefit more from psychosocial interventions.

2. METHOD

2.1. Search strategy

Studies were identified by searching five electronic databases, including Web of Science (1900-2013), MEDLINE (1949-2013), PubMed (1946-2013), PsycINFO (1894-2013) and Embase (1973-2013) databases. The following keywords were used: Cancer, oncology, AND emotion* expression, emotion* inhibition, expressive disclosure, emotion* disclosure, repression, expression, writing, talking or sharing. Reference lists of the identified articles and relevant review papers were then explored to ensure that any articles missed by the database searches were identified and included in the review. This literature search was conducted in August and September 2013.

2.2. Inclusion criteria

This review included studies if they explored the effects of an expressive writing intervention in cancer patients. Participants were adults aged over 18 years old, with a current or previous cancer diagnosis, and could be at any stage of the disease. All studies included in this review employed a randomised controlled trial design. Some studies also explored a moderating role of participants' characteristics on the outcome of expressive writing interventions. These moderators are discussed where they have been investigated, however studies were not excluded if they did not investigate moderators. This review only included studies published in the English language. There were no restrictions regarding publication dates of the studies.

2.3. Exclusion criteria

Studies which did not randomise participants were excluded. According to Sibbald and Roland (1998), while non-randomised controlled trials can detect associations between an intervention and an outcome, they cannot exclude the possibility that this association was caused by an unidentified third factor which is linked both to the intervention and the outcome. Studies in which the intervention included an element of group work were excluded as it was not clear whether the EWI intervention alone would yield the same results. Studies were excluded if they only assessed biological outcomes such as pain. Systematic reviews, conference abstracts and dissertations were excluded from the review.

2.4. Data extraction process

As part of the review process, a data extraction sheet was developed, which detailed the following data items extracted from each study included in the review: 1). Objectives of the study; 2). Inclusion and exclusion criteria; 3.) participant characteristics including gender, age, type and stage of cancer; 4.) a description of the expressive writing intervention and control conditions; 5). follow up time points, 6.) moderator variables, 7.) outcome variables, 8.) conclusions, 9.) limitations, and 10.) ideas for future research. See Appendix A.

2.5. Methodological evaluation

2.5.1. The Downs and Black tool

Included studies were assessed with the Downs and Black Tool (Downs & Black, 1998) for methodological quality, and the Cochrane Collaboration's tool for assessing risk of bias (Higgins et al., 2011, Higgins & Altman, 2008). The Downs and Black Tool (Downs and Black, 1998) (see Appendix B) consists of 27 questions in four categories: reporting (n=11), external validity and power (n=4), internal validity (bias) (n=7) and internal validity (confounding) (n=6). The last item in the Downs and Black tool, which asks about the power of the study, has been modified in previous systematic reviews because of the complexity in its scoring in the original version (Monteiro & Victora, 2005; Samoocha et al., 2010). These studies changed the item from a score out of five to a score out of one, and placed the item in the external validity category. A score of 1 was given if a power calculation was present while a score of 0 was given if there was no power calculation or exploration of whether the number of participants was appropriate. Each study was then categorised as strong, moderate, limited, or poor quality depending on its total score out of 27.

Mean scores employing the Downs and Black Tool (Downs and Black, 1998) were 21.94 (SD = 2.30, range = 18-26). Appendix C displays the analyses of items 1 through 27 of the tool, with separate tables for 1.) reporting analysis, 2.) external validity and power, 3.) internal validity (bias) and 4.) internal validity (confounding). Twelve studies were classed as being of strong methodological quality and five were classed as being of moderate methodological quality. When comparing the four categories from the Downs and Black tool, the category of internal validity (bias and confounding) scored the lowest, with a mean score of 5.41 (SD =.94, range = 4-7) out of a maximum of 7 for bias and a mean score of 4.94 (SD = .75, range = 4-6) out of a maximum of 6 for confounding. Reporting (/10) had a mean score of 7.94 (SD = .90, range = 6-9) and external validity and power analysis (/4) had a mean of 6.45 (SD = 3.60, range = 3-4).

The drop-out rate in the included studies was relatively low apart from in studies which included metastatic and palliative patients some of whom died during the study (de Moor et al. 2002; Low et al. 2010; Rosenburg et al. 2002). It was also suggested by de Moor et al (2008) that drop out is likely in those patients who are about to have surgery, as they had a 62% completion rate in their study. Craft et al. (2013) also reported a 42% drop out rate, however they used an intention-to-treat analysis in order to take this into account.

The Down and Black tool has been argued to be both valid and reliable for evaluating experimental and nonexperimental studies (Altman & Burton, 1999; Olivo et al., 2008; Saunders, Soomro, Buckingham, Jamtvedt & Raina, 2003) and has been rated as one of the top six quality assessment tools (Deeks et al., 2003; Saunders, Soomro, Buckingham, Jamtvedt, & Raina, 2003). Several previously published reviews in the field of health psychology have employed the Downs and Black tool to critically evaluate included studies (e.g. Rosenbloom, Khan, McCartney & Katz, 2013; Samoocha, Bruinvels, Elbers, Anema & van der Beek, 2010).

2.5.2. The Risk of Bias tool

Higgins et al (2011) however, argue that it is not appropriate to critique clinical trials using quality scales and their resulting scores, as such quality scales combine assessments of both the quality of reporting of the trial and also the trials conduct, often assigning different weights to each aspect. The Cochrane Collaboration's tool for assessing risk of bias (Higgins et al., 2011, Higgins & Altman, 2008) was first designed in 2005 and adapted in 2011. The authors argue that including the details of trial conduct, on which the review author's judgments of the risk of bias are based, means there is improved transparency with this approach, as it allows readers to decide whether they agree with the judgments that have been made. The risk of bias tool (Higgins et al., 2011) argues that randomised controlled trials should 1.) generate a random allocation sequence; 2.) conceal allocation; 3.) blind participants and healthcare providers; 4.) report incomplete outcome data and 5.) report all data rather than selective data. To establish the validity of the randomised controlled trials, each study was evaluated on the basis of these five components, and was rated either '-' low risk for bias, '+' high risk for bias, or 'U' unreported.

Appendix D displays the assessment of risk of bias of each study included in this review. Each aspect was rated as either '-' (low risk for bias), '+' (high risk for bias) or 'U' (unreported). Only 3 out of 15 studies provided adequate information for all five aspects (Arden-Close et al. 2013; Cepeda et al. 2008; Stanton et al. 2002), and therefore were categorised as low risk for potential biases. While Creswell et al. (2007) and Low et al. (2006) reanalysed results from a previous study (Stanton et al., 2002) these studies were rated for methodological quality based on their reporting of the study and not what was known to be reported by Stanton et al. (2002). Over half of the studies included in this review did not report generation of random allocation sequence (10 studies, 58.8%), allocation concealment (12 studies, 70.5%), and blinding of participants and researchers (12 studies, 70.5%). For statements supporting the author's judgement regarding each bias, see Appendix D.

This review therefore employs both the Downs and Black tool and the Risk of Bias tool in order to allow the reader to compare each study using both tools. Each study was evaluated using these scoring systems by two researchers who discussed the scores of each study throughout.

2.5.3. Comparisons between Downs and Black and risk of bias ratings

It is evident from the Downs and Black tool (1998) that all the studies in this review were categorised as of either strong or moderate methodological quality. However, when using The Cochrane Collaboration's tool for assessing risk of bias (Higgins et al., 2011, Higgins & Altman, 2008), the majority of studies did not provide adequate information for its five aspects to be assessed, and therefore would be considered to be of poor quality by this tool. This demonstrates the variability of different criteria for assessing methodological quality that are currently used within the field. Arguably, as The Cochrane Collaboration's tool was designed to assess the quality of randomised controlled trials, it could be concluded that this tool is more suitable for use in this review, and therefore that the majority of the included studies are of poor methodological quality. It is clear that authors of future RCTs need to be clearer in their reporting of the randomisation, allocation concealment, blinding and selective reporting during such trials.

3. RESULTS

3.1. Selection of studies

A summary of the study selection process is shown in Figure 1. After applying the search limit to studies published in the English language and to those with human participants a total of 173 potentially relevant articles were identified through an initial search using PsycINFO, Web of Science, MEDLINE, Embase and PubMed. Of these 173 articles, 87 were identified as relevant by title and abstract. Manual reference searches did not identify any further randomised controlled trials. These studies were then examined fully for inclusion based on inclusion and exclusion criteria. Seventy-one studies did not meet the inclusion criteria due to either having non randomised designs, no control group, or interventions that were not solely expressive writing. A total of 17 studies were thus identified as eligible for inclusion in this review. Table 1 displays the characteristics of the 17 studies.

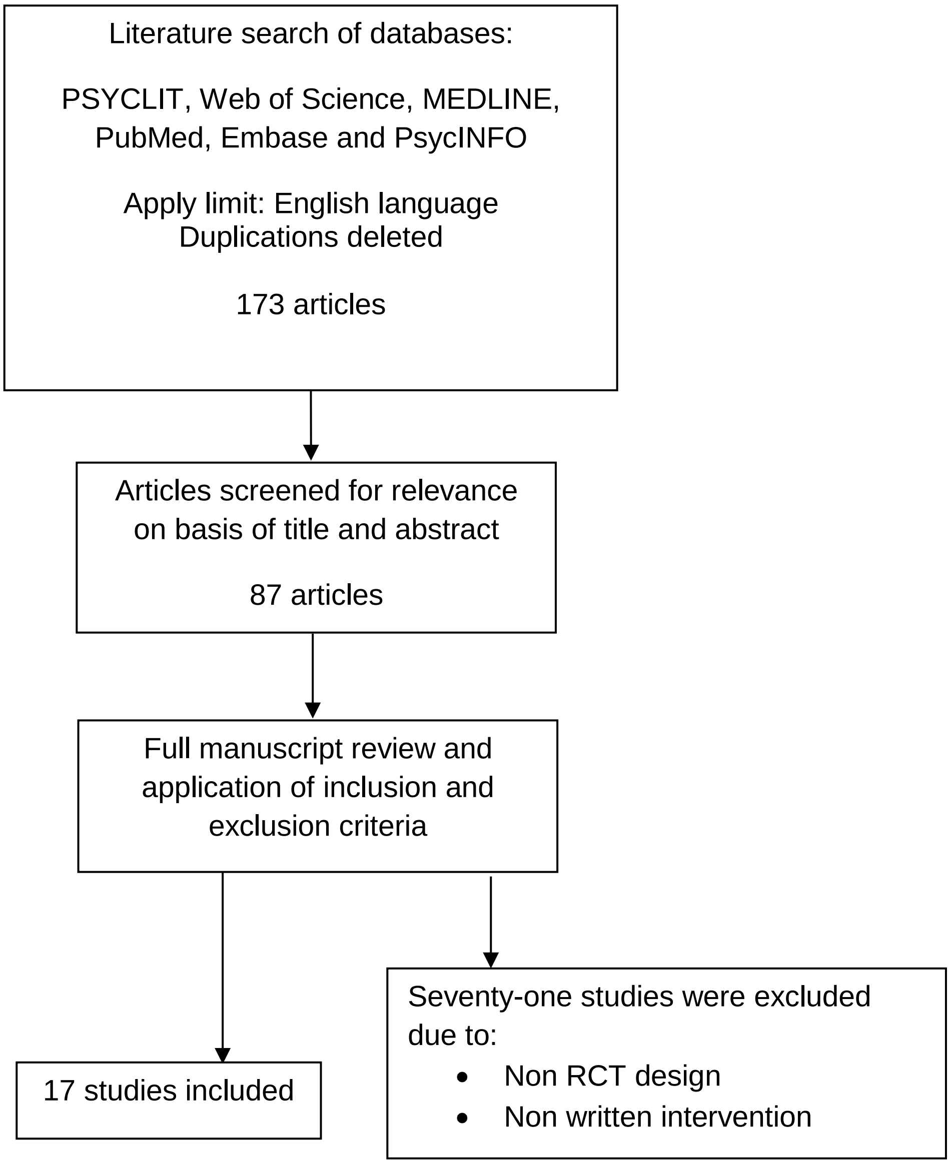

Figure 1. Flow diagram of study selection process

3.2. Study and participant characteristics

All 17 studies were randomised controlled trials which were available in the English language and were conducted in a developed country. Sixteen studies were carried out in the USA and one in the United Kingdom. All trials recruited participants from hospitals or university cancer centres. One study included spouses, while the rest included only the individual with cancer. Two of the studies were studies that re-examined data from a previously published study (Stanton et al, 2002). These studies were included because they added to the research literature by examining moderators, which can help us understand why there is such variance in the outcomes of psychosocial interventions (Tamagawa et al., 2012).

The characteristics of the participants from the 17 studies varied. Of the 17 studies, 10 (58.8%) included female participants with breast cancer (Creswell et al., 2007; Gellaitry et al., 2010; Low et al., 2010; de Moor et al., 2008; Low et al., 2006; Stanton et al., 2002; Walker, Nail & Croyle, 1999). Five studies (33%) included male participants with either prostate cancer (Rosenburg et al., 2002, Zakowski et al., 2004) renal cell carcinoma (de Moor et al. 2002), stage IV cancer of several different types (Cepeda et al., 2008) and patients receiving palliative care for several different cancer types (Bruera et al., 2008). The majority of studies (71%) included participants with stage I and II cancer while 29% included participants with stage III and IV cancer (Bruera et al., 2008; Cepeda et al., 2008; deMoor et al., 2002; Low et al., 2010; Mosher et al., 2012). The included studies involved a total of 1,775 participants. Two of the studies did not contribute original data to the research literature, instead further examining existing research for moderators and mediators (Creswell et al., 2007; Low et al., 2006). It was decided that these studies would be included in this review as one of the aims of the review was to examine which moderating variables are important in the outcome of expressive writing interventions.

The number of participants in each study ranged from 24 to 507. The sample sizes of the studies varied with five having total samples of over 100 participants, seven having 50-100 participants and five with less than 50 participants. Only two studies had a sample size of over 100 participants per group, two studies had 50 – 100 participants per group and the remaining 13 studies had fewer than 50 participants per group.

3.3. Experimental conditions

Table 1 shows the experimental and control conditions for each trial. Twelve studies had a two-arm design and five studies had a three-arm design, having more than two experimental conditions. All trials had an expressive writing condition where thoughts and feelings about cancer were explored. The expressive writing interventions in the included studies were based on the writing paradigm used in previously published studies which asked participants to write about their deepest thoughts and feelings, for between three and five sessions, usually over consecutive days for 15-20 minutes per writing session (Pennebaker, 1994, 1997a, 1997b; Smyth & Pennebaker, 1999). While the original studies were conducted in the laboratory, more recently the writing sessions have been conducted at home, including in the studies included in this review, apart from de Moor et al. (2002). See Appendix 1 for Pennebaker's original expressive writing protocol (Pennebaker, 1994). Typical writing instructions are as follows:

> 'For the next 4 days, I would like you to write your very deepest thoughts and feelings about the most traumatic experience of your entire life or an extremely important emotional issue that has affected you and your life. In your writing, I'd like you to really let go and explore your deepest emotions and thoughts. You might tie your topic to your relationships with others, including parents, lovers, friends or relatives; to your past, your present or your future; or to who you have been, who you would like to be or who you are now. You may write about the same general issues or experiences on all days of writing or about different topics each day. All of your writing will be completely confidential. Don't worry about spelling, grammar or sentence structure. The only rule is that once you begin writing, you continue until the time is up.' (Baikie & Wilhelm (2005).

The studies in this review stated that they based their intervention on this writing prompt, adapting it to ask participants about their experience of cancer. Two studies (Arden-Close et al., 2013; Gellaitry et al., 2010) used a Guided Disclosure Protocol (GDP) where participants were guided to write different aspects of their experience on each day. On day one they were asked to write about their deepest thoughts and feelings regarding their cancer. On day two they were asked to write about what having breast cancer means to them. On day three they were asked to write about the positive aspects of their cancer experience, and on day four they were asked to write about their thoughts regarding the future.

Only three studies presented the exact prompt that participants were given (Arden-Close et al., 2013; Rosenburg et al., 2002, Stanton et al., 2002), while the remainder stated that the full details could be requested from the authors. All participants completed the intervention at home, apart in the trial by de Moor et al. (2002) where sessions were conducted in clinic waiting areas.

3.4. Other experimental conditions

One study had a condition where participants could write about any self-selected trauma (Craft et al., 2013), and three studies had a condition where they were asked to write about the positive aspects of their cancer experience (Creswell et al., 2007; Low et al., 2006; Stanton et al., 2002). Gellaitry et al. (2010) asked participants to write about positive aspects in one of four writing sessions, but did not look at positive aspect writing as a separate condition.

3.5. Control conditions

Five of the studies had a control condition that consisted of usual care (Craft et al., 2013; Gellaitry et al., 2010; Cepeda et al., 2008; Rosenburg et al., 2002; Walker, Nail & Croyle, 1999), while 12 of these studies had an active control condition, which consisted of either writing factual material about their previous day (Arden-Close et al., 2013; Mosher et al., 2012; Jensen-Johansen et al., 2012; Stanton et al., 2002; Zakowski et al., 2011; Zakowski et al., 2004) or factual material regarding their cancer diagnosis and treatment (Creswell et al., 2007; Low et al., 2010). One study had both a neutral writing and no writing condition (Craft et al., 2013). One study had an attentional control group, who completed a questionnaire (Cepeda et al., 2008), and one study compared a condition where participants wrote on three occasions and a condition where participants only wrote on one occasion. .

Table 1. Participants and interventions

Authors (year)	**Country**	**Participants. Mean age**	**Recruitment**	**Conditions (n)**	**Expressive writing intervention**	**Control intervention**	**No. of sessions, length**	**Downs & Black rating**
Arden-Close et al (2013)	UK	102 couples where one partner had ovarian cancer. EWI group 53 yrs, control group 57 yrs	Members of a charity for those with ovarian cancer who consented to be contacted by third parties.	1. EWI (n = 53 couples) 2.Control (n = 49 couples)	Guided Disclosure Protocol (GDP). Written emotional disclosure about the patient's diagnosis and treatment.	Fact writing. Wrote about what the patient did the previous day.	Three consecutive days, 15 mins.	26
Craft et al (2013)	USA	120 women with stage I, II, and III breast cancer. 56 yrs	Recruited from a cancer center	1. EWI (n = 26). 2. Any self selected trauma (n = 19). 3. Fact writing control (n = 22). 4. Usual care control (n = 44)	Deepest thoughts and feelings re: cancer experience.	1. Fact writing. Facts about breast cancer diagnosis and treatment. 2. Usual care.	Four consecutive days, 20 mins.	21
Mosher et al (2012)	USA	87 women with metastatic breast cancer and significant distress. 57 yrs	Recruited from a cancer center in New York between March 2008 and November 2009.	1. EWI (n = 44). 2. Control (n = 42).	Deepest thoughts and feelings re: cancer experience.	Fact writing. Wrote about activities of the previous day.	Four writing sessions over 4-7 weeks, 20 mins.	20
Jensen-Johansen et al (2012)	Denmark	507 women treated for stage I and II breast cancer, treated with surgery within 3 weeks of diagnosis. 53 yrs	Recruited from a cancer center between March and September 2006.	1. EWI (n = 253). 2. Control (n = 254).	Wrote about a traumatic experience and deepest thoughts and feelings re: cancer experience.	Fact writing. Wrote about daily activities.	Three weekly writing sessions, 20 mins.	23
Zakowski et al (2011)	USA	88 women with gynaecological cancer at all stages of disease. 57 yrs	Recruited through clinics in the metropolitan areas of Milwaukee, Wisconsin and Reno, Nevada between 1998 and 2003	1. EWI (n = 43). 2. Control (n = 45).	Deepest thoughts and feelings re: cancer experience.	Fact writing. Wrote about daily activities.	Three consecutive days, 20 mins.	21
Gellaitry et al (2010)	USA	93 women with stage I and II breast cancer	Recruited from a cancer center, during their final week of treatment.	1. EWI (n = 45) 2. Control (n = 48)	Day 1: Exploring deepest thoughts and feelings re: experience	Usual care.	Four consecutive days, 20 mins.	21

					of breast cancer. Day 2: What does having breast cancer mean to you? Day 3: Benefit finding. Day 4: Looking to the future.			
Low et al (2010)	USA	62 women with stage IV breast cancer. 53 years	Recruited from a cancer center.	1. EWI (n = 31). 2. Control (n = 31).	Wrote about cancer-related emotions.	Fact writing. Facts about breast cancer diagnosis and treatment.	Four 20 min sessions within 3 weeks.	24
Cepeda et al (2008)	USA	234 patients with different cancer types. 49 years. 64% female	Recruited from oncology, radiotherapy, and pain clinic of the Javeriana University Oncology Centre and the Colombian National Institute of Cancer.	1. EWI (n = 79). 2. Attentional control (n = 77). 3. Usual care control (n = 78).	Wrote a story about how cancer affected their lives.	1. Attentional control. Completed McGill Pain Questionnaire. 2. Usual care	Three weekly sessions, 20 mins.	25
de Moor et al (2008)	USA	49 patients with breast cancer. EWI group 56 years, control 50 years	Recruited from a cancer center at the end of neoadjuvant chemotherapy	1. EWI (n = 24). 2. Control (n = 25).	Deepest thoughts and feelings re: breast cancer	Fact writing. Wrote about dietary behaviours, physical activity, substance use and sleep habits	Four sessions in a week, 20 mins.	21
Bruera et al (2008)	USA	24 patients receiving palliative care. 54 years, 66% female	Recruited from a cancer center	1. EWI (n = 12). 2. Control (n = 12)	Deepest thoughts and feelings re: breast cancer experience.	Fact writing. Wrote about dietary behaviours, physical activity, substance use and sleep habits.	Four sessions in 2 week period, 20 mins.	18
Creswell et al (2007)	USA	63 patients with stage I and II breast cancer. 49 yrs (Further examined Stanton et al 2002)	Used sample from Stanton et al (2002)	1. EWI (n not reported). 2. Positive writing (n not reported). 3. Control (n not reported).	1. Deepest thoughts and feelings re: breast cancer experience. 2. Positive thoughts and feelings regarding their experience with breast cancer.	Fact writing. Facts about breast cancer diagnosis and treatment.	Four sessions in 3 week period, 20 mins.	23

Low et al (2006)	USA	63 patients with stage I and II breast cancer. 49 yrs (Further examined Stanton et al 2002)	Used sample from Stanton et al (2002)	1. EWI (n = 20). 2. Positive writing (n = 19). 3. Control (n = 16).	Wrote about their deepest thoughts and feelings re: breast cancer experience.	Fact writing. Facts about breast cancer diagnosis and treatment.	Four sessions in 3 week period, 20 mins.	23
Zakowski et al (2004)	USA	104 prostate and gynaecological cancer patients. 59 years. 51.9% female	Recruited through clinics in the Chicago and Milwaukee metropolitan areas for an on-going longitudinal study	1. EWI (n = 62). 2. Control (n = 42).	Deepest thoughts and feelings re: cancer experience.	Fact writing. Wrote about daily activities.	Three consecutive days, 20 mins.	20
Rosenburg et al (2002)	USA	30 prostate cancer patients receiving outpatient care. 70 years	Recruited through an outpatient clinic at a cancer center.	1. EWI (n = 16). 2. Control (n = 14).	Wrote about experience of prostate cancer and treatment. Also allowed to write about other traumatic experiences.	Usual care	Four consecutive days, 20-30 mins.	20
de Moor et al (2002)	USA	42 patients with metastatic renal cell carcinoma. 56.4 years, 85.7% male	Recruited through a Phase II clinical trial of vaccine therapy	1. EWI (n = 21) 2. Control (n = 21)	Wrote about deepest thoughts and feelings re: cancer.	Fact writing. Wrote about dietary behaviours, physical activity, substance use and sleep habits	Four weekly sessions, length not reported.	20
Stanton et al (2002)	USA	63 patients with stage I and II female breast cancer patients. 49 years	Recruited through an outpatient clinic at a cancer center.	1. EWI (n = 20). 2. Positive writing (n = 19). 3. Control (n = 16).	1. Wrote about their deepest thoughts and feelings re: breast cancer experience. 2. Wrote about positive thoughts and feelings re: breast cancer.	Fact writing. Facts about breast cancer diagnosis and treatment.	Four sessions in 3 week period, 20 mins.	26
Walker, Nail & Croyle (1999)	USA	44 women completing radiotherapy for stage I or II breast cancer	Recruited through an outpatient clinic at a cancer center.	1. EWI single dose (n = 11) 2. EWI three doses (n = 14). 3. Control (n = 14).	Wrote about deepest thoughts and feelings re: cancer experience.	Usual care.	1. One session at the clinic lasting 30 mins. 2. Three sessions in 3 days, 30 mins.	21

3.6. Outcomes

All studies reported a follow up, with seven studies reporting one follow up only (Mosher et al., 2012; Low et al., 2010; Creswell et al., 2007; Low et al., 2004; Stanton et al., 2002; Zakowski et al., 2011; Zakowski et al., 2004), six studies with two follow up assessments (Arden-Close et al., 2013; Craft et al., 2013; Jensen-Johansen et al., 2012; de Moor et al., 2008; Rosenburg et al., 2002; Stanton et al., 2002), and four studies reporting three or more follow up assessments (Gellaitry et al., 2010; Cepeda et al., 2008; de Moor et al., 2002; Walker, Nail & Croyle, 1999). Follow ups ranged from between one and nine months. See Table 2 for more information on the follow ups within each study.

Table 2. Outcomes and results

Authors	Outcome studied	Measures	Data points	Results	Moderators examined	Moderators significant
Arden-Close et al (2013)	QoL, perceived stress	The Functional Assessment of Cancer Therapy—General (FACT-G). The Perceived Stress Scale (PSS)	Baseline, 3 months, 6 months	No main effects for any outcomes. However, in patients, QoL improved if illness-related couple communication improved and buffered the effect of intrusive thoughts on perceived stress. The interaction explained 2.3% of the variance in QoL at 3-month followup (B=1.17, SE=0.52, b=0.20; F(1, 85) = 5.16, p=0.03).	Illness related communication	Change in illness-related communication moderated the effect of group on QoL in patients (B=1.17, SE=0.52, b=0.20; F(1, 85) = 5.16, p=0.03).
Craft et al (2013)	Spiritual wellbeing, depression, Distress, sleep quality	Functional Assessment of Cancer Therapy-Breast Cancer Version (FACT-B)	Baseline, 1 month, 6 months	EWI group had better quality of life at 1 month follow up (F(3,93) = 4.22, P = 0.008, partial n^2 = 0.120). Fact writing group also reported better quality of life at 1 month follow up (mean = 119.62 SD 13.52) compared to usual care controls (mean = 104.38 SD 21.31).		
Mosher et al (2012)	Impact of events, depression, mood, alexithymia	Functional Assessment of Chronic Illness Therapy—Spiritual Well-Being scale, CES-D, The Distress Thermometer, PSQI.	Baseline, 8 weeks	No main effects. EWI group reported greater use of mental health services during study than controls (odds ratio = 3.40, 95% CI, 1.05 to 11.08).		
Jensen-Johansen et al	Personality, mood, impact of events, psychological	IES, BDI, POMS, Passive Positive Mood Scale (PPMS), Toronto Alexithymia	Baseline, 3 and 9 months	No main effects.	Alexithymia	TAS-20 EOT scores moderated the effect of EWI on IES total scores at 3 months (β= .26, p =

(2012)	distress	Scale (TAS-20).				.021).
Zakowski et al (2011)	Depression, cognitive intrusion, emotional support	Neo Five Factor Inventory, BSI, POMS, IES	Baseline, 6 months	No main effects.	Neuroticism, extraversion	Neuroticism but not extraversion moderated effects of emotional disclosure on distress (F(1,83) = 8.47, p < .01).*
Gellaitry et al (2010)	Social support, QoL, mood	The Significant Others Scale, FACT-B, POMS, Questions on healthcare utilisation	Baseline, 1 month, 3 months, 6 months	No main effects of mood, QoL, healthcare utilisation. Those in the EWI group were more satisfied with the emotional support they received (F(1,77) = 54.20, p<0.05).		
Low et al (2010)	Pain, wellbeing	CES-D, Intrusions subscale of IES, questions on emotional support.	Baseline, 3 months	No main effects.	Social constraints	Those with high levels of perceived social constraints reported lower distress (F(1, 99) = 1.45, p < .04) and fewer avoidant thoughts (F(1, 99) = 6.25, p < 0.2).
Cepeda et al (2008)	Anxiety	Rated their pain on a 0-10 scale and their well-being on a seven-point Likert scale weekly for 8 weeks.	Daily, throughout the 8 week study.	No main effects.		
de Moor et al (2008)	Distress, perceived stress, sleep disturbance, pain	BSI, PSS, PSQI, BPI	Baseline, 3 days before surgery, 2 wks after.	No main effects.	Social constraints	Those with high levels of social constraints had lower daily pain after surgery (t(1, 31) = 2.10, p = .05).

Bruera et al (2008)	Anxiety	STAI	Baseline, before and after each writing session.	No main effects.		
Creswell et al (2007)	Mood, QoL, physical health	POMS, FACT-T, questions on physical health outcomes.	Baseline, 3 months	EWI group (β = 1.37, t(54) = -2.99, p = .004) and positive writing group (β -.23, t(54) = -1.92, p = .060) had fewer physical symptoms at 3 month follow up. Self-affirmation fully mediated this relationship.	Life satisfaction, mood	Baseline life satisfaction or mood did not moderate the outcomes of expressive writing.
Low et al (2006)	Mood, QoL, physical health	POMS, FACT-T, questions on physical health outcomes.	Baseline, 3 months	No main effects.		
Zakowski et al (2004)	Social constrants, mood, impact of events, psychological distress	Social constraints measure, POMS, IES, BSI.	Baseline, 6 months	No main effects.	Social constraints	Those with high levels of social constraints reported lower distress (F(1, 99) = 1.45, p < .04) and fewer avoidant thoughts (F(1, 99) = 6.25, p < 0.2) following EWI.
Rosenburg et al (2002)	Pain, QoL, psychological distress, mood, ways of coping	BPI, FACT-P, SCL-90 POMS-B, WOC-C	Baseline, 3 and 6 months	No main effects for psychological variables. Those in the EWI group showed greater improvements in pain severity (F = 3.98, df = 2.0, p = .03), frequency of health care contacts (F = 2.65, df = 2.0, p = .09) and lower utilisation of medicines (F = 2.73, df = 2.0, p = .08).		

de Moor et al (2002)	Impact of events, mood, perceived stress, sleep quality	IES, POMS, PSS, PSQI	Baseline, 4, 6, 8, 10 weeks	No main effects found for distress, impact of events, perceived stress, mood disturbance, except for Vigor subscale of POMS (ES = 0.82, p = .03). Patients in EW group had less sleep disturbance, better sleep quality (ES = -.99, p = .01), sleep duration (ES = -.87, p = .04), and less daytime dysfunction (ES = 1.03, p = .04).
Stanton et al (2002)	Mood, QoL, physical health	POMS, FACT, questions on physical health outcomes.	Baseline, 1 month, 3 months	No difference in depression or quality of life scores. EWI group had fewer physical symptoms and cancer related Dr's visits (F(4,100) = 3.18; *P* = .0166).
Walker, Nail & Croyle (1999)	Positive mood, impact of events, side effect severity	PANAS, IES, Side Effect Severity Scale (SEC)	1, 4-6, 16, and 28 weeks	No main effects.

* This study aimed primarily to investigate moderators of the relationship between EWI and psychological outcomes

Key: BDI = Beck Depression Inventory; BPI = Brief Pain Inventory; BSI = Brief Symptoms Inventory; CES-D = The Center for Epidemiologic Studies– Depression Scale; FACT = Functional Assessment of Cancer Therapy; FACT-F = Functional Assessment of Chronic Illness Therapy - Fatigue; FACT – P = Functional Assessment of Cancer Therapy Scale – Prostate; IES = Impact of Events Scale; MOS-SF12 = Medical Outcomes Study – Short Form; PANAS = Positive and Negative Affect Scale; POMS = Profile of Mood States; POMS – B = The Brief Profile of Mood States; PSQI = Pittsburgh Sleep Quality Index; PSS = Perceived Stress Scale; SCL – 90 = The Symptom Checklist 90 Revised; STAI = State Trait Anxiety Inventory; WOC-C = The Ways of Coping – Cancer Version.

All the measures used in the included studies were validated tools.

3.7. Effects of interventions

Comparisons between expressive writing interventions, usual care and neutral writing conditions are shown in Table 2 and explored in more detail below. The impact of EWI were examined regarding depressive symptoms and mood, general psychiatric symptoms, perceived stress, psychosocial functioning, the impact of events, ways of coping, perceptions of emotional support and pain and other physical outcomes. Expressive writing interventions did not appear to be related to improvements in depressive symptoms, quality of life or other psychological variables. Expressive writing interventions do appear to be effective in reducing pain and other physical health outcomes however. In some cases results are reported where there are three or fewer studies from which the conclusions were gathered. This applied particularly to comparisons between EWI and an attentional control group, EWI and a positive writing group, different doses of EWI, and also to data on moderator variables which were only studied in 6 trials. Data comparing conditions are described in turn below. Table 3 summarises which studies found significant and non-significant findings for each comparison.

Table 3. Summary of significant and non-significant group differences by comparison

Comparison	**Outcomes measured**	**Significant findings**	**Non-significant findings**
1.) EWI vs. usual care	Depressive symptoms and mood	None	Gelliatry et al. (2010); Rosenburg et al. (2002); Walker, Nail and Croyle (1999)
	General psychiatric symptoms	None	Cepeda et al. (2008); Rosenburg et al. (2002)
	Quality of life	Craft et al. (2013)	Gellaitry et al. (2010); Rosenburg et al. (2002);
	Impact of events		Walker, Nail & Croyle., (1999)
	Ways of coping		Rosenburg et al. (2002)
	Emotional support	Gellaitry et al. (2010)	None
	Pain and other physical	Rosenburg et al. (2002)	Gellaitry et al. (2010); Cepeda et al. (2008)
2.) EWI vs. NW	Depressive symptoms and mood	de Moor et al. (2002)	Mosher et al. (2012); Jensen-Johansen et al. (2012); Zakowski et al. (2011); Low et al. (2010); de Moor et al. (2008) Bruera et al. (2008); Creswell et al. (2007); Low et al. (2006); Zakowski et al. (2004); Stanton et al. (2002)
	General psychiatric symptoms	None	Mosher et al. (2012); Zakowski et al. (2011); de Moor et al. (2008); Bruera et al. (2008); Zakowski et al. (2004)
	Quality of life	Craft et al. (2013)	Arden-Close et al. (2013); Creswell et al. (2007); Low et al. (2006); Stanton et al. (2002);
	Perceived stress		Arden-Close et al. (2013); de Moor et al. (2008); de Moor et al. (2002)
	Use of mental health services	Mosher et al. (2012)	None
	Psychosocial functioning	Zakowski et al. (2004)	None
	Impact of events	None	Jensen-Johansen et al. (2012); Zakowski et al. (2011); Low et al. (2010); Zakowski et al. (2004); de Moor et al. (2002)
	Pain and other physical	Creswell et al. (2007) Stanton et al. (2002)	None
	Sleep	de Moor et al. (2002)	Craft et al. (2013); de Moor et al (2008)
3.) EWI vs. attentional control	Sense of wellbeing	None	Cepeda et al (2008)
	Pain intensity	None	Cepeda et al (2008)
4.) EWI vs. any trauma		Craft et al. (2013)	
5.) EWI vs. positive		None	Stanton et al. (2002)
6.) One dose vs. three doses		None	Walker, Nail & Croyle (1999)

3.7.1. Comparison 1: Expressive writing versus no intervention/usual care

Depressive symptoms and mood

No differences in mood between experimental and usual care control groups were found by Gelliatry et al. (2010), Rosenburg et al. (2002) and Walker, Nail and Croyle (1999).

General psychiatric symptoms

Cepeda et al. (2008) found that sense of wellbeing was similar in all conditions before and after treatment. Rosenburg et al. (2002) found no group differences in SCL-90 scores.

Quality of life

Craft et al. (2013) found that expressive writing about breast cancer and breast cancer trauma significantly improved participants quality of life at one and six month follow ups ($t(25) = 5.88$, $P < 0.001$). There were significant group differences between those who wrote about breast cancer trauma and those who did not write at all at one month follow up ($F(3,93) = 4.22$, $P = 0.008$, partial $n^2 = 0.120$) but not at six month follow up. Gellaitry et al. (2010) and Rosenburg et al. (2002) found no group differences in quality of life.

Impact of events

Walker, Nail & Croyle (1999) found that EWI did not decrease cognitive intrusion or avoidance.

Ways of coping

Rosenburg et al. (2002) reported no group differences in ways of coping.

Perceptions of emotional support

Gellaitry et al. (2010) found that those in the EWI group reported that they were more satisfied with the emotional support that they received from a range of key individuals than those in the usual care group ($F(1,77) = 54.20$, $p<0.05$). Those in the EWI group reported a decrease in discrepancy between ideal and actual levels of emotional support while emotional support discrepancy increased in the control group, which suggests that writing helped women to maintain levels of emotional support which satisfied them.

Pain and other physical health symptoms

Cepeda et al. (2008) found that pain intensity was similar in all conditions before and after treatment. Rosenburg et al. (2002) reported that those in the expressive disclosure condition showed greater improvements in physical health outcomes including pain severity (F = 3.98, df = 2.0, p = .03), frequency of health care contacts (F = 2.65, df = 2.0, p = .09) and lower utilisation of medicines (F = 2.73, df = 2.0, p = .08) in comparison to controls. Gellaitry et al. (2010) however found there were no group differences in health care utilisation.

3.7.2. Comparison 2: Expressive writing versus neutral writing

Depressive symptoms and mood

There were no differences in depression scores or mood scores between expressive writing and neutral writing groups (Mosher et al., 2012; Jensen-Johansen et al., 2012; Zakowski et al., 2011; Low et al., 2010; de Moor et al., 2008; Bruera et al., 2008; Creswell et al., 2007; Low et al., 2006, Zakowski et al., 2004, Stanton et al., 2002), apart from on the Vigor subscale of the POMS in the study by de Moor et al. (2002) (ES = 0.82, p = .03).

General psychiatric symptoms

No differences between experimental and neutral writing participants were found on the General Severity Index (Zakowski et al., 2004). No group differences found in spiritual wellbeing, distress or sleep quality were found by Mosher et al. (2012). Zakowski et al. (2011), Zakowski et al. (2004) and de Moor et al. (2008) found no group differences on the Brief Symptoms Inventory. Bruera et al. (2008) found no main effects for anxiety using the State Trait Anxiety Inventory.

Quality of life

Craft et al. (2013) found that there was significant group differences between those who wrote about breast cancer trauma and those who wrote about facts regarding breast cancer at one month follow up (F(3,93) = 4.22, P = 0.008, partial n^2 = 0.120). However, while they hypothesised that the fact writing group would not experience quality of life benefits, this group did still produce statistically significant results at one month follow up (mean = 119.62, SD = 13.52) compared to the no writing group (mean = 104.38, SD = 21.31). Arden-Close et al. (2013), Stanton et al. (2002) and two papers which further analysed these findings (Creswell et al., 2007; Low et al., 2006) found no group differences in quality of life. Arden-Close et al. (2013) reported that quality of life did improve however if illness-related couple communication improved and buffered the effect of intrusive thoughts on perceived stress. The interaction explained 2.3% of the variance in quality of life at 3-month follow up (B=1.17, SE=0.52, b=0.20; F(1, 85) = 5.16, p=0.03).

Perceived stress

No significant group differences were found using the Perceived Stress Scale (PSS) (Arden-Close et al., 2013; de Moor et al., 2008; de Moor et al., 2002).

Use of mental health services

Mosher et al. (2012) found that the expressive writing group reported greater use of mental health services than the neutral writing group during the study (odds ratio = 3.40, 95% CI, 1.05 to 11.08).

Psychosocial functioning

Zakowski et al (2004) found that written expression buffered the effects of social constraints on distress (GSI score) at a six month follow-up (β = -.507, t(4.45) = 1. 99, p < 0.04.)

Impact of events

No differences were found between expressive and neutral writing groups in the Impact of Events Scale scores (Jensen-Johansen et al., 2012; Zakowski et al., 2011; Zakowski et al., 2004; de Moor et al., 2002). Low et al. (2010) found no group differences in the Intrusions subscale of the IES.

Pain and other physical outcomes

Creswell et al. (2007) found that those who wrote about their deepest thoughts and feelings regarding cancer (β = 1.37, t(54) = -2.99, p = .004) and those who wrote about positive thoughts and feelings about their experience (β -.23, t(54) = -1.92, p = .060) had fewer physical symptoms at three month follow up. Emotional expression (β = -.48, t(57) = -.36, p = .001) and benefit finding (β = –.35), *t*(57) = –2.46, *p* = .017) also predicted less cancer-related doctor visits for three months following the intervention. Stanton et al. (2002) found that compared to fact writing controls, those participants who engaged in emotionally expressive writing and benefit finding participants had fewer physical symptoms and cancer-related doctor visits at 3-month follow-up (F(4,100) = 3.18; p = .0166).

Sleep

de Moor et al. (2002) found that patients in the EWI group had less sleep disturbance, better sleep quality (ES = -.99, p = .01), sleep duration (ES = -.87, p = .04), and less daytime dysfunction (ES = 1.03, p = .04) compared to neutral writing controls. However de Moor's later study (de Moor et al. 2008) found no main effects for sleep, and neither did Craft et al (2013).

3.7.3. <u>Comparison 3: Expressive writing versus attentional control</u>

Only one study examined differences between an EWI group and an attentional control group, who completed the McGill Pain Questionnaire (Cepeda et al., 2008). They found that pain intensity and sense of well-being were similar in the EWI and attentional control group before and after treatment.

3.7.4. Comparison 4: Expressive writing versus any self-selected trauma

Only Craft et al. (2013) included a condition where participants wrote about any self-selected trauma. It was found that those participants who wrote about the trauma of their breast cancer had higher scores at one month follow up than those who wrote about any self-selected traumatic event ($F(3,93) = 4.22$, $P = 0.008$, partial $n^2 = 0.120$).

3.7.5. Comparison 5: Expressive writing versus positive thoughts and feelings about cancer

Three studies examined differences between EWI and writing about positive thoughts and feelings about cancer. However all three studies originated from the same original data (Stanton et al., 2002). This study found that no group differences in psychological outcomes between experimental and control groups. They did find however that avoidance was significantly related to distress at one month in the EWI condition ($F(1, 17) = 14.28$, $p = .0015$), and that EWI resulted in a decrease in distress for women who were low on avoidance.

3.7.6. Comparison 6: One dose versus three dose writing sessions

Only one study varied the number of writing sessions between experimental groups, with one group completing one writing session and one group completing three writing sessions (Walker, Nail & Croyle, 1999). They reported that neither of these interventions were effective in reducing psychological symptoms.

3.8. Moderators

The studies in this review examined the role of 8 moderator variables. These are explored in further detail below.

Personality traits

Two studies examined the moderating effects of personality variables. These were alexithymia (Jensen-Johansen et al., 2012), neuroticism (Zakowski et al., 2011), and extraversion (Zakowski et al., 2011). Alexithymia is defined as an inability to identify and describe emotions in the self according to Sifneos (1973). Jensen-Johansen et al. (2012) found that scores on the External Oriented Thinking subscale of The Toronto Alexithymia Scale (TAS-20) moderated the effect of EWI on Impact of Events scores at three month follow up ($\beta = .26$, $p = .021$). Those who had greater difficulties with describing feelings were more likely to have an increase in positive mood (PPMS) from baseline to three month follow up in the control group ($\beta = -.24$, $p = .049$) but not in the EWI group. Neuroticism has been defined as ‘a dispositional tendency to experience negative emotions’ (Watson & Clark, 1984). Zakowski et al. (2011) reported that women with low levels of neuroticism had lower distress levels and cancer related avoidance compared to women with high levels of neuroticism in the EWI group ($F(1,83) = 8.47$, $p < .01$). Extraversion, which has been defined by Costa and McCrae (1980) as ‘being active, energetic and outgoing’ was not found to be a moderator in the same study.

Psychological wellbeing

Creswell et al. (2007) studied life satisfaction and mood as moderators. Neither of these psychological variables were found to moderate the effects of emotional writing on distress. Those who had a poorer quality of life and lower mood reported that their wellbeing improved following the EWI equally to those who had a better mood and quality of life.

Social support

Four studies examined social support variables as moderators. These were social constraints (Jensen-Johansen et al., 2012; de Moor et al., 2008; Zakowski et al., 2004), and emotional support (Low et al., 2010). Social constraints has been defined as perceived inadequacy in social support, which can lead to an increase in reluctance to express one’s thoughts and emotions (Lepore & Hegeson, 1998). Zakowski et al. (2004) found that those with high levels of perceived social constraints reported lower distress ($F(1, 99) = 1.45$, $p < .04$) and fewer avoidant thoughts ($F(1, 99) = 6.25$, $p < 0.2$) following EWI, while those with high levels of social constraints in the control condition reported greater distress and more avoidant thoughts. Furthermore, de Moor et al (2008) found average daily pain was lower following EWI in those with high levels of social constraints ($t(1, 31) = 2.10$, $p = .05$). Jensen-Johansen et al. (2012) found no statistically significant moderation effects of social constraints in any of the analyses however. Low et al. (2010) found that patients with low levels of social support had fewer intrusive thoughts following expressive writing. Arden-Close et al. (2013) found that change in illness-related communication between couples during the expressive writing intervention moderated the effect of group on quality of life in patients ($B=1.17$, $SE=0.52$, $b=0.20$; $F(1, 85) = 5.16$, $p=0.03$). In summary, it appears that expressive writing interventions were more helpful for patients who had poor social support prior to these interventions.

4. DISCUSSION

Those psychological variables examined in the EWI studies appeared to be largely unchanged following the intervention. Despite this however, results indicate that expressive writing is linked to changes in physical symptoms and decreased medical use for patients. This has also been found to be the case in studies of other long term health conditions such as asthma, arthritis (Smyth, Stone, Hurewitz & Kaell, 1999) and HIV (Petrie, Fontanilla, Thomas, Booth & Pennebaker, 2004). Expressive writing also appears to improve sleep quality and duration in cancer patients, as well as in those with other chronic health conditions (e.g. Gillis, 2002). Expressive writing does not appear to be feasible in palliative care populations. In addition, positive writing, or ‘benefit finding’ was also found not to have any psychological benefits, and no differences were found between a one dose and three dose writing intervention.

It has been argued for many decades that inhibiting emotions is damaging to our mental health and that negative emotions that have not been expressed can interfere with our ability to deal with new events (Baikie, 2008; Baker, 2009; Manning, 2010). The largely nonsignificant findings of the trials included in this review therefore warrants exploration. There are several possible reasons that could account for these null findings: 1.) insufficient power, 2.) low rates of depression and anxiety, and high levels of quality of life in study participants, 3.) insufficient differences between expressive writing and neutral writing interventions, 4.) asking participants to write about cancer-related trauma only. These are explored in turn below.

4.1. Methodological issues this review highlights

One reason for the mixed results of EWI trials could be insufficient statistical power due to moderate sample sizes (mean n = 104). At present, it is not possible to draw comparisons between results of therapy trials and EWI trials, as effect sizes of many verbal interventions are much larger than what has been reported in EWI studies. According to Pennebaker (2004), while it may be tempting to compare CBT and expressive writing, such comparisons are ‘premature’.

Another possible explanation for null findings in the included studies is the finding that most participants were well adjusted psychologically, with low rates of depression and anxiety, and high levels of quality of life. However, while trials conducted in non-metastatic populations have recruited participants with low levels of psychological distress, this has not been the case in those trials that involved metastatic or palliative care populations, and so there remains an alternative explanation for null findings. Bruera et al. (2008) conclude that expressive writing interventions are not feasible in palliative care settings, as although they found that patients were willing to participate, most became too ill to complete the study. They argued that those in the palliative care population may even experience negative effects of writing as has previously been found in those with posttraumatic stress disorder (Gidron et al., 1996), as coping skills training may be needed before expressive writing can be beneficial. Mosher et al. (2012) assert that whilst participants in most expressive writing trials have been able to reflect on past stressors, metastatic and palliative care patients are writing about an ongoing and life threatening stressor. Previous research has argued that decreasing physiological arousal towards traumatic memories is crucial in experiencing benefits from expressive writing (Low et al. 2006), which suggests that writing about a current, life threatening stressor may have limited psychological benefit.

It could be the case that expressive writing groups and neutral writing groups did not write significantly differently in order for effects to be found. For example, Bruera et al. (2008) reported that while participants in the expressive writing group were instructed to write about their deepest thoughts and feelings about cancer, little of what was written included words that are considered emotional by Pennebaker et al. (1996). It could also be argued that writing about facts regarding one's cancer diagnosis cannot be emotionally neutral. Craft et al. (2013) argue that focusing on the total experience of cancer that includes physical responses such as sleep and fatigue may be as helpful as focusing on emotional responses to with cancer. This does not explain why few main effects were found compared to usual care control groups however.

The non-significant results of expressive writing on psychological wellbeing in these studies suggests that it is possible that dealing with cancer may not be the most traumatic experience that patients feel needs to be explored and expressed. Only one study (Craft et al., 2013) included a condition where participants were able to choose a traumatic event to write about. It could be the case that being made to express cancer-related emotions when this may not be needed at the time may not be as helpful as expressing feelings related to another previous trauma. Suppressing previous trauma had been found to negatively impact upon the ability to deal with a current traumatic situation (Manning, 2010). Contrary to this idea, Craft et al. (2013) did not find writing about any self-selected trauma to be effective in cancer patients, and this group had the highest drop-out rate, even though most of them wrote about their cancer experience. Craft et al. (2013) argue that being given a writing topic is helpful, and having to make a choice about writing topic might somehow affect the benefit of expressive writing.

In summary, it remains unclear why trials continue to find few psychological benefits of expressive writing in those with cancer. How expressive writing can benefit pain and other physical symptoms if it does not benefit patients psychologically remains a mystery.

4.2. Moderators

The findings of the studies included in this review clearly indicate that emotional expression is not beneficial for everyone at all times, an idea that had been put forward by previous research literature (Stroebe et al., 2002). Tamagawa et al. (2012) concluded in their review that identifying moderators is one way to understand why there is such variance in the outcomes of psychosocial interventions, and to help researchers identify who is most likely to benefit from such interventions (Tamagawa et al., 2012). Several studies included in this review included moderating variables. Factors encompassing general psychological wellbeing were not significant moderators. It appears that those who have a poorer quality of life and lower mood improved equally following the EWI to those who had a better mood and quality of life. This finding contrasts with previous research which has suggested that psychological intervention in cancer patients is usually more beneficial for people with poorer psychological health and quality of life (Naaman et al., 2009; Ross et al., 2002; Schneider et al., 2010; Sheard & Maguire, 1999; Tamagawa et al., 2012).

In terms of personality factors, those with higher levels of neuroticism were found to have higher distress levels at follow up than those with lower levels of neuroticism (Zakowski et al., 2011). Previous literature has also suggested that people who lack the ability to reflect upon and process their emotional experiences benefit less from expressive writing (Pennebaker, 1997). Jensen-Johansen et al. (2012) found that those who had greater difficulties with describing feelings were more likely to have an increase in positive mood (PPMS) from baseline to three month follow up in the control group but not in the EWI group. Results from non-cancer samples are also ambiguous, with some studies indicating that expressive writing is more beneficial for alexithymic individuals (e.g. Baikie, 2008), and others finding it to be ineffective (e.g. Lumley, Tojek & Macklem, 2002).

Social factors appear to play a moderating role on the main effects of the included studies. Zakowski et al. (2004) found that those with high levels of perceived social constraints reported lower distress and fewer avoidant thoughts following EWI, and de Moor et al. (2008) also found average daily pain was lower in those with high levels of social constraints. Jensen-Johansen et al. (2012) found no statistically significant moderation effects of social constraints in any of the analyses however. Perceived social support also appears to play a moderating role, with Low et al. (2010) finding that patients with low levels of perceived social support had fewer intrusive thoughts following expressive writing. Arden-Close et al. (2013) found that change in illness-related communication between couples during the expressive writing intervention moderated the effect of group on quality of life in patients. Lepore (2001) proposed a social-cognitive processing theory which suggests that when people perceive there to be social constraints on their expression of negative thoughts and emotions, this may impact upon their psychological adjustment to life stressors (Lepore, Silver, Wartman & Wayment, 1996). Expressive writing interventions may provide an opportunity for people with high social constraints to compensate for their perceived poor social support, allowing them to tell their story and reflect on the role of cancer in their life, and therefore acting as a buffer against their poor social support.

4.3. Gaps in the literature

At present, it remains unclear how the effects of written emotional disclosure compare to those of therapy. No studies have investigated differences between expressive writing interventions and individual therapy to the author’s knowledge. Secondly, according to Mosher et al. (2012) it remains unclear whether expressive writing is more or less beneficial for patients during acute phases of the stressor such as after diagnosis or after receiving test results that indicate metastases. Thirdly, only one study so far has explored whether it is unhelpful to assume that cancer is the most important trauma for an individual to disclose during expressive writing interventions. In terms of moderating variables, it appears that perceived social constraints and social support could play a moderating role on the main effects of the included studies, but results are inconsistent and require further exploration. Finally, it is unknown whether written emotional expression is as effective in cancer populations than in other samples with physical and psychological difficulties, and the reasons for any differences found remain unclear.

4.4. Future research

There are several avenues for further research to explore. Firstly, studies exploring differences between written and verbal expression (therapy) are needed to decipher whether expressive writing interventions are as efficacious as verbal emotional expression. As written emotional disclosure would be more cost effective than therapy, this would be important to know. Studies which compare the effects of EWI at different key time points such as after diagnosis or after test results indicating metastases are needed in order to help establish whether expressive writing is more or less beneficial for patients during acute phases of the stressor. More trials which include a self selected trauma topic are required, to examine whether it is unhelpful to assume that cancer is the most important trauma for an individual to express. Randomisation of participants to cancer specific and non cancer specific writing groups is required so comparisons can be made between cancer specific and non-cancer specific writing groups. Finally, future studies could benefit from further examining moderators of the effects of expressive writing on physical and psychological health outcomes, as there is still a need to further examine factors which determine who is more and less likely to benefit from EWI (Jensen-Johansen et al., 2012). It appears that perceived social constraints and social support could play a moderating role, but further studies which replicate and extend these findings are required. Finally, studies that explore differences in results found in cancer and non-cancer populations would be beneficial in exploring why expressive writing may not be as effective in cancer populations.

4.5. Limitations of this review

This review has several limitations. The quality of reported data and methodology varied considerably. The use of both the Downs and Black tool (1998) and the Risk of Bias tool (Higgins et al., 2011, Higgins & Altman, 2008) also highlights the differences in methodological ratings according to the tool utilised. All the studies in this review were categorised as of either strong methodological quality or moderate methodological quality according to the Downs and Black tool. However, when using Risk of Bias tool, the majority of studies did not provide adequate information for its five aspects to be assessed, and therefore would be considered to be of poor quality. Both tools were utilised in this review as the author began appraising the studies using the Downs and Black tool, and after deciding to only include RCTs in the review, it was decided that the Risk of Bias tool may be more appropriate. The data from the Downs and Black tool is still presented here for interest. The samples included in this review were predominantly Caucasian, and therefore results may not be generalisable to different cultures. This could be particularly relevant as emotional expression can vary widely between cultures. According to Niedenthal et al. (2006), moderation of emotional expression is evident in more collectivist cultures more than in individualistic cultures, as strong emotions could be seen as disrupting intra-group relationships and social functioning. Furthermore, only 29% of studies included a total of 100 or more participants, and therefore power to detect group differences is relatively low in this review. According to Bartolucci and Hillegass (2010), conducting a meta-analysis in this area would enables us to detect a small but clinically relevant effect of the interventions included. A meta-analysis was not conducted here due to the heterogenous nature of the outcomes measured, as meta-analysis assumes that evaluation techniques are consistent across studies (Bartolucci & Hillegass, 2010).

4.6. Conclusion

As suggested by Craft et al. (2013) results of EWI trials are varied and several questions still remain. Despite the absence of evidence that expressive writing interventions reduce psychological suffering for people with cancer, the authors of these trials continue to argue that expressive writing interventions are ‘feasible’ and well received by participants. On the whole, drop-out rates were low, apart from studies focusing on those with metastases or those receiving palliative care, which suggests that the interventions were tolerated well by participants. However, while expressive writing interventions have been considered ‘feasible’ and have been found to benefit participants’ physical health, the majority of evidence suggests that such interventions on the whole are not beneficial psychologically at follow up.

Considering the small number of studies that have examined moderators in this participant group, it is not possible to state decisively for whom expressive writing interventions are most effective. Only if future research can replicate the moderating roles of social constraints and neuroticism and exclude other moderators can we start to identify specific psychosocial variables which may make EWI more or less beneficial. There appears to be a long way to go before clinicians can make recommendations to patients that they should ‘write their wrongs’ (Bolton, 2006, p. 98).

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EMPIRICAL PAPER

ATTITUDE TOWARDS EMOTIONAL EXPRESSION, RESILIENCE AND PSYCHOLOGICAL WELLBEING IN CANCER SURVIVORS

Abstract

Objective: This study aimed to investigate the relationship between attitude towards emotional expression, resilience and psychological wellbeing in cancer survivors. It was hypothesised that those with lower resilience and a more negative attitude towards emotional expression would have poorer quality of life and more psychological symptoms.

Method: Participants were 251 individuals (139 male, 112 female) with a non-metastatic cancer diagnosis, having received cancer treatment in the previous eight months. Participants completed measures of attitude towards emotional expression, resilience, quality of life and psychological symptoms.

Results: Age explained 4.3% of the variance in psychosymptomatology. Resilience explained 9.2% of the variance in quality of life, and increased the explained variance in psychosymptomatology to 15%. The addition of attitude towards emotional expression increased the explained variance to 14.1% for quality of life, and 24% for psychosymptomatology. The belief that expressing emotions will lead to social rejection predicts poorer resilience and psychological wellbeing in cancer survivors.

Discussion: Results replicate previous findings that psychological resilience is a ‘buffer’ against poor psychological wellbeing. Patients may benefit from resilience training to enhance their coping skills. In addition, interventions which address a negative attitude towards emotional expression may also be of benefit.

Word count: 5189

1. INTRODUCTION

The latest figures from Cancer Research UK indicate that over two million people in the UK are living with or beyond cancer (Cancer Research UK, 2013). With 320,467 new cases of cancer being diagnosed in the UK in 2009 alone, incidence rates are rising. Survival rates have also increased significantly in recent decades (Cancer Research UK, 2013; Coleman et al., 2011; Peto, Boreham, Clarke, Davies & Beral, 2000; Ries et al., 2003). As a result of the ageing population, and earlier detection of cancer and improvements in treatment, it has been further estimated that the number of people living with cancer could rise by more than 3% per year (Maddams et al., 2008).

Although the treatments currently available for cancer can prolong life and potentially treat the disease, both the disease and the treatments themselves can cause substantial suffering, impairments in quality of life (Carlson et al., 2004; Zabora et al., 1997) and psychosocial functioning (Pitceathly & Maguire, 2003; Badr & Taylor, 2005; Garos, Kluck, & Aranoff, 2007). Macmillan Cancer Support (2011) defines a cancer survivor as someone who has received cancer treatment and has no current disease, or is living with progressive disease and may be receiving treatment but is not in the terminal phase of illness. The NHS Cancer Reform Strategy (Department of Health, 2007) stresses the importance of cancer survivors being given psychological and social assistance in order to help them have ‘as normal a life as they can’.

However, not everyone struggles in the face of adversity. Although many cancer patients suffer from emotional distress and poorer quality of life, the psychosocial factors which contribute towards distress vulnerability in cancer patients remains poorly understood (Min et al., 2013). ‘Resilience’ has become an increasingly popular area of study in the social and medical sciences. Stewart and Yuen (2011) state that ‘resilience is the capacity of individuals to maintain, or regain their mental health in the face of significant adversity, including physical illness.’

In the past two decades, there has been a move away from illness models that focus on ‘deficits’, and towards models that focus on ‘strengths’, in order to further an understanding of how many people are able to develop psychologically healthily despite being at risk of psychological difficulty (Windle, 2011). This way of coping can result in the individual ‘bouncing back’ to their previous state of functioning, or not displaying any adverse effects (Masten, 2009). A more controversial idea of resilience has come from the suggestion that people sometimes experience ‘posttraumatic growth’ whereby the adversity results in better functioning than was experienced previously (Linley & Joseph, 2004; Tedeshi & Calhoun, 2004). The concept of resilience is a dynamic and interactive one, which considers protective factors and positive adaptation to adversity, rather than focusing on risk factors (Hjemdal, 2007). As this field has only become popular in the last decade, there is no generally accepted theoretical model of resilience available at present.

Early resilience research focused on young people who were considered to be at risk due to absent or poor parenting, poor living conditions, or violence. These studies were found to report several common characteristics in resilient individuals, including self-esteem, optimism, mastery, hope, spirituality, determination, effective coping strategies, and good social support (Garmezy, Masten, & Tellegen, 1984; Masten et al., 1988; Werner & Smith, 1982). A recent systematic review (Stewart & Yuen, 2011) of resilience in the chronically physically ill found similar characteristics in resilient individuals, and concluded that while working definitions of resilience differed across studies, it was consistently associated with several psychological factors across different diseases. These were self-efficacy, self-esteem, internal locus of control, optimism and mastery.

Studies which focus on psychological resilience in cancer survivors have reported that there are common psychological responses to cancer diagnosis and treatment, with resilience being the most common (e.g. Deshields, Tibbs, Fan & Taylor, 2006). According to Greve and Staudiner (2006), while people may experience a lower level of psychological functioning during difficult life circumstances such as chronic illnesses than they would without the illness, this should still be considered resilience. Resilience has been found to predict greater fatigue in the early stages of radiotherapy (Strauss et al., 2007) and has been found to be an important psychological predictor of psychological wellbeing and quality of life in cancer patients (Strauss et al., 2007). It was decided that this research study would focus on psychological resilience as opposed to other models of coping due to the lack of existing research in this new area of study and the grant funding given to one of the research supervisors to study resilience.

The way in which individuals with chronic disease process and express their emotions has been previously linked to their psychological adjustment to the disease. It has been argued that emotional regulation, defined as ‘the individuals' efforts to control which emotions they have, when they have them, and how they express them’ (Gross, 2002), may influence how patients adapt both physically and psychologically to their chronic disease (Porter, Keith, Lipkus and Hurwitz, 2005). Research suggests that this may be particularly relevant for patients facing a life-threatening diagnosis such as cancer, which may be associated with many physical and psychological symptoms for both patients and caregivers (Bernhard and Hurny, 1998; Northouse et al., 2000). The majority of existing research indicates that those who express their negative emotions are more likely to experience less distress than those that suppress them (e.g. Iwamitsu et al., 2005; Iwamitsu et al., 2003; Stanton et al., 2002). The results of several studies suggest that emotional expression is linked to psychological wellbeing in cancer survivors. Porter, Keith, Lipkus and Hurwitz (2005) found that patients who had high levels of ambivalence towards emotional expression engaged in more catastrophising and reported higher levels of pain behaviours and poorer quality of life. Patients whose caregivers were high in ambivalence towards emotional expression also experienced more catastrophising, pain and lower emotional well-being. Servaes et al. (1999) examined differences in emotional expression between a breast cancer and healthy group. The patient group showed more ambivalence over emotional expression and more restraint than healthy controls, although there were no group differences in alexithymia or the expression of emotions in general. The expressive writing paradigm has been studied extensively and has been suggested to be helpful in cancer populations, although results from randomised controlled trials are mixed (Craft, Davis & Paulson, 2013).

There have not been any studies to date which have explored whether attitude towards emotional expression is linked to psychological resilience in cancer survivors. This study therefore aims to investigate whether there is a relationship between attitude towards emotional expression, psychological resilience and wellbeing in cancer survivors. It was hypothesised that psychological symptomatology and poor quality of life would be positively related to a negative attitude towards emotional expression. Secondly, it was hypothesised that a positive attitude towards emotional expression would be related to psychological resilience. Thirdly, it was hypothesised that attitude towards emotional expression and resilience would significantly predict psychological symptomatology and quality of life.

According to Deshields et al (2006), research in this area could be helpful to clinicians in helping identify patient characteristics that are associated with distress and furthermore could help establish which clinical interventions promote resilience in survivors. This research could therefore have significant clinical implications; firstly, in terms of helping identify cancer survivors who may be more vulnerable to psychological distress and secondly by considering whether interventions that target cancer patients’ resilience through their perceptions of their attitude towards emotional expression could be beneficial to wellbeing.

2. METHOD

2.1. Ethical considerations

This study was reviewed and approved by Solihull Research Ethics Committee (Reference number 13/WM/0079) and the Research and Development Office at University Hospital Birmingham (see Appendix F for approval letter). Individual cancer consultants were told about the aims and procedures of the study and were aware that their patients may be taking part. Lists of potential participants were given to the West Midlands Cancer Intelligence Unit (WMCIU), where participants were checked to be alive and their details correct before questionnaires were posted. Data collection and storage complied with the Data Protection Act (1998) and the Caldicott Principles (Department of Health, 1997). Questionnaires were given a unique identifier. A password protected document was then kept on an NHS computer linking identifiers to patient names and demographic details. Solihull Research Ethics Committee did not require a consent form to be completed by participants, as they considered the return of the questionnaire as consent. Participants were made aware that their care would not be affected in any way should they choose not to take part, and that they could withdraw their data from the study at any time. A fellow trainee who was working on a joint project was the main contact point for participants regarding questions around study participation.

2.2. Participants and recruitment method

Participants were individuals who had been given a cancer diagnosis and had completed treatment in the previous eight months. Participants were recruited as outpatients at the Cancer Centre at University Hospital Birmingham. This study was combined with a study conducted by a fellow clinical psychologist in training, who was recruiting from the same participant group but investigating the role of illness beliefs. It was decided that combining the two information sheets and questionnaire packs would reduce the burden on participants compared to taking part in two separate studies. Potential participants were identified through a clinical database which holds all patient details. In order to identify patients who might meet the inclusion criteria, lists of patients who had recently finished treatment were accessed through nurses who delivered chemotherapy and radiotherapy at the cancer centre.

2.3. Inclusion/exclusion criteria

Inclusion criteria were as follows: over 18 years of age; a previous diagnosis of cancer, of any type and stage; had finished cancer treatment in the previous 2 weeks to 8 months; non metastatic cancer/curative treatment; able to speak, read and write in English. Exclusion criteria were as follows: medical status precluding participation (which included visual loss, current hospitalisation, seizures, unable to write, confusion); those who were currently or had previously been seen by a clinical psychologist at the Cancer Centre for psychological difficulties. Potential participants' medical notes were accessed to establish whether they met the inclusion criteria.

2.4. Procedure

Those individuals who met the inclusion criteria were then contacted via post with an invitation letter, the study information sheet and the questionnaires enclosed. Participants who did not wish to complete the questionnaires were asked to return them uncompleted in the pre-paid envelope provided to ensure their desire not to participate was recorded. Those individuals who did not return the questionnaires within two weeks of receiving them were sent a reminder letter. Two-hundred and fifty-six participants chose to take part in the study out of a total of 557 who were invited, resulting in a 45.9% response rate. Five potential participants stated that they felt too physically unwell to participate in the study. Forty-nine sent the questionnaire back in the post to record their wish not to participate, however they did not record a reason. The remaining non-responders did not return the questionnaire. Responders and non-responders were compared on several demographic characteristics. They did not significantly differ on gender, age, time since treatment, cancer type or time since diagnosis. Five participants' data were excluded due to missing data.

2.5. Measures

Demographic questionnaire

A demographic questionnaire asked participants for their gender, date of birth, ethnicity, religion, marital status, education, occupation, and hours worked before and after cancer diagnosis. Information regarding participants' cancer diagnoses, stage and treatment were accessed through their medical notes, with participants' permission.

The Attitude Towards Emotional Expression Scale (AEE; Joseph, Willians, Irwing & Cammock, 1994)

The AEE is a 20 item measure of the individual's attitudes towards emotional expression. Items are rated on a five point Likert scale from one (strongly disagree) to five (strongly agree) and higher scores represent a more negative attitude towards emotional expression. The AEE has four subscales in total, and mean scores are calculated for the items in each subscale, with possible ranges of four to twenty. Three of these subscales measure the extent to which the person believes that: expression of emotions is a sign of weakness (weakness); emotions should be kept under control (control); and other people will reject expressed emotions (social). The fourth subscale measures the behavioural tendency to keep emotions to oneself (non-expression). The AEE is considered to be valid, and the internal reliabilities of the subscales are considered satisfactory (Cronbach's alphas = .90, .90, .83, and .77) (Laghai & Joseph, 2000; Joseph et al., 1994).

The Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003)

The CD-RISC is a 25 item self-rated questionnaire used to quantify resilience, encapsulating the concepts of control, challenge (hardiness), goal-orientation, adaptability, commitment, self-esteem, humour, social skills, and pain endurance. Each item is answered based on the respondents feelings in the past month, and is rated on a five point Likert scale from 0 (not at all true) to 4 (true nearly all the time). The scale gives a score between 0 and 100, with higher scores representing greater resilience. When the scale was described initially, mean scores for individuals in the general population were 80.4 (Connor & Davidson, 2003). The CD-RISC has solid psychometric properties and is able to distinguish between various degrees of illness severity according to Connor and Davidson (2003). The CD-RISC has been employed in previous cancer studies (e.g. Sharpley et al., 2014).

The Symptom Checklist 90 Revised (SCL-90-R; Derogatis, 1977; 1994)

The Symptom Checklist-90-Revised (SCL-90-R) is a self-report inventory which asks respondents to rate how distressed they have felt over the past seven days on a list of 90 psychological symptom items. Answers are rated on a five point Likert scale ranging from 1 (not at all) to 5 (extremely). The SCL-90-R measures symptoms that correspond with nine primary symptom dimensions and three global scores. The primary symptom dimensions are: Somatization (SOM), Obsessive-Compulsive (OBS), Interpersonal Sensitivity (INT), Depression (DEP), Anxiety (ANX), Hostility (HOS), Phobic Anxiety (PHOB), Paranoid Ideation (PAR), and Psychoticism (PSY). The global scales are the Global Severity Index (GSI), the Positive Symptom Distress Index (PSDI), and the Positive Symptom Total (PST). Of these three summary scales, the global symptom index (GSI) is considered the most reliable indicator of overall distress. The SCL-90 is appropriate for use with individuals from the community, as well as those with psychological or medical difficulties. Previous studies have indicated that the SCL-90-R is appropriate for assessing adjustment in chronic illness (Green, Gleser, Stone, & Seifert, 1975; Merpert & Recklitis, 2012; Mitchell, 1985; Schmitz, Kruse, Heckrath, Alberti, & Tress, 1999; Thompson et al., 1994), and had been used widely in cancer survivors (Elkin, Phipps, Mulhern, & Fairclough, 1997; Lerman, Jarski, Rea, Gellish, & Vicini, 2011; Recklitis, O'Leary, & Diller, 2003; Tas et al., 2007; Tross et al., 1996; Wijnberg-Williams, Kamps, Klip, & Hoekstra-Weebers, 2006).

European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30; Aaronson et al., 1993)

The EORTC QLQ-C30 is a measure that was developed by the European Organization for Research and Treatment of Cancer (EORTC) Study Group on Quality of Life to assess topics relevant to cancer patients. The EORTC Quality of Life Questionnaire (QLQ-C30) consists of 30 items covering physical, role, emotional, cognitive and social function, as well as global health status. In addition, there are symptom scales which measure fatigue, nausea and vomiting, pain and six single-item scales (diarrhoea, constipation, appetite loss, insomnia, dyspnoea, and financial difficulties). A higher score on functioning scales represents a higher ('better') level of functioning while higher scores on symptom scales indicate higher ('worse') level of symptoms. Item scores are linearly transformed to a range from 0 to 100. Previous studies have found the measure to be a valid and reliable in assessing quality of life aspects relevant to cancer patient populations (Aaronson et al., 1993; Bjordal & Kassa, 1992).

2.6. Data analysis

All data analysis was carried out using IBM SPSS version 19.0 (Statistical Package for the Social Sciences). Firstly, data were checked for data entry errors by checking the minimum and maximum values for each subscale. Where maximum or minimum values fell outside the possible range, the respondent's questionnaire was checked again for the correct score. Missing data were substituted with the mean score on the subscale, where only one item score was missing. Where two or more item scores were missing on one subscale, the participant was excluded from the analysis. Scores on the AEE and SCL-90 were not normally distributed, therefore nonparametric analyses were performed where possible. All tests were one-tailed, in keeping with the directional hypotheses. Spearman's rank correlations were used to explore the first and second hypotheses, i.e. the relationships between AEE, CD-RISC, SCL-90R and EORTC QLQ-C30 subscale scores. Regression analyses were then employed to establish whether resilience and attitude towards emotional expression predicted quality of life and psychological symptoms. There is no nonparametric equivalent for regression that currently exists. Allison (1999) states that in regression, normal distribution is the least important assumption of regression, and emphasises assumptions such as linearity and homoscedasticity of residuals, alongside absence of multicollinearity, extreme outliers, and leverage of residuals. These assumptions were met by the data in the present study, and as a result regression analysis was considered appropriate. Hierarchical regression was employed as it can be useful for evaluating contributions of predictors over and above the previously entered predictors as a means for examining incremental validity (Field, 2013). Resilience was entered first as psychological resilience has been shown to predict psychological wellbeing in several previous studies (Mi Ryu & Yi, 2013; Min et al., 2013; Sharpley, Bitsika, Wootten & Christic, 2014; Strauss et al., 2007). The author wanted to examine the additional effect of attitude towards emotional expression over and above any effect of resilience, therefore resilience was entered first and attitude towards emotional expression second. Kerlinger (1986) stated that there is no “correct” method for choosing the order of variable entry in hierarchical regression; ‘the theory behind the problem should determine the order of entry of variables in multiple regression analysis’ (p. 545). In order to test for the presence of significant differences in resilience and psychological wellbeing in patients who exhibited ‘strong’ versus ‘weak’ belief that emotional expression will lead to social rejection, t-tests of scores were conducted using the median split for AEE social rejection score to form ‘strong’ versus ‘weak belief subgroups.

3. RESULTS

3.1. Participant characteristics

Data from 251 participants (139 male, 112 female) were used in the data analysis. Ninety two were individuals with prostate cancer (36.6%), 91 with breast cancer (36.2%), 22 with colorectal cancer (8.8%) and 46 in an ‘other’ cancer group (18.3%). This ‘other cancer’ group consisted of those with gynaecological cancer (n = 7), skin cancer (n = 11), lung cancer (n = 3), head and neck (n = 15), blood cancer (n = 4), bone cancer (n = 1), bladder cancer (n = 4), and testicular cancer (n = 1). Sociodemographic and clinical characteristics factors are presented in Table 1.

Table 1. Sociodemographic and clinical factors

Sociodemographic factors	**Breast** **(n = 91)**	**Prostate** **(n = 92)**	**Colorectal** **(n = 22)**	**Other** **(n = 46)**
Gender				
Female	95.6%	0%	54.5%	46.2%
Male	4.4%	100%	31.8%	53.8%
Mean age	61.2 (12.5)	67.51 (7.67)	64.18 (10.33)	64.72 (11.07)
Ethnicity				
White	92.3%	90.1%	86.4%	86.0%
Black Caribbean	1.1%	4.4%	0%	0%
Black African	1.1%	1.1%	0%	0%
Asian	4.4%	1.1%	13.6%	11.6%
Religion				
Athiest	9.9%	13.2%	13.6%	14.0%
Christian	74.7%	74.7%	59.1%	67.4%
Sikh	1.1%	0%	0%	11.6%
Hindu	1.1%	0%	0%	0%
Muslim	3.3%	1.1%	13.6%	0%
Jehovas witness	0%	1.1%	0%	0%
Spiritualist	0%	1.1%	0%	0%
Marital status				
Married	72.5%	73.6%	72.7%	76.7%
Not married/divorced/ widowed	27.5%	26.4%	27.3%	23.3%
Academic attainment				
No qualifications	29.7%	37.4%	57.1%	38.1%
GCSE equivalent	33%	26.4%	14.3%	59.5%
A level equivalent	15.4%	16.5%	0%	7.1%
Degree or higher	18.7%	17.6%	28.6%	26.2%
Work status				
Full time	18.7%	18.7%	13.6%	4.7%
Part time	31.9%	20.9%	27.3%	14.0%
Retired	42.9%	54.9%	50.0%	69.8%
Homemaker	2.2%	3.3%	4.5%	2.3%
Student	0%	0%	4.5%	0%
Sick leave	1%	2.2%	0%	7.0%
Clinical factors				
Treatment type				
Radiotherapy (r/therapy)	90.1%	53.8%	36.4%	95.2%
Chemotherapy (c/therapy)	30.8%	2.2%	9.1%	33.3%
Surgery	63.7%	50.5%	90.9%	19.0%
Treatment combinations				
Radiotherapy only	24.2%	47.3%	0%	48.8%
Chemotherapy only	3.3%	0%	9.1%	4.7%
Surgery only	1.1%	46.2%	54.5%	0%
Surgery and c/therapy	2.2%	0%	31.8%	0%
Surgery and r/therapy	40.7%	0%	4.5%	16.3%
Surgery and c/therapy and r/therapy	23.1%	0%	0%	2.3%
C/therapy and r/therapy	3.3%	2.2%	0%	18.6%
One or more comorbidities	47.3%	47.3%	40.9%	37.2%
Time since treatment (months)	4.81 (1.50)	4.8 (1.94)	5.59 (1.94)	4.89 (1.72)
Time since diagnosis (months)	11/67 (5.41)	17.31 (16.74)	9.16 (5.21)	13.86 (12.29)

3.2. Post hoc power calculations

It is important to consider whether the present study is sufficiently powered to support the conclusions made by the author. The main identified risk would be that the correlations displayed in Table 3 would contain Type 2 errors (the possibility that some correlations may not have achieved significance due to the number of participants). Power analysis was therefore carried out using G-power (version 3.1.9) to establish the sample size that would have been needed to allow the strongest nonsignificant correlation and linear regression to achieve a level of significance, assuming a two tailed $p<0.05$. It should be noted however that this calculation is based on parametric analysis and the correlations presented here are nonparametric. Adopting a power of 0.90, the sample size needed for the strongest nonsignificant correlation to reach significance would be 92 cancer survivors. The sample size needed for the multiple regression to achieve significance would be 209 cancer survivors. The sample size was therefore sufficiently large to find key effects, whilst minimising type I and type II errors.

3.3. Descriptive statistics for measures obtained

Table 2 presents the sample characteristics for the measures obtained. According to Verdonck-de Leeuw et al. (2010) a difference in EORTC QLQ-C30 scores of between 10 and 20 represents a moderate subjective difference. Employing this system, the EORTC QLQ-C30 scores for men on physical functioning, role functioning and emotional functioning are higher than normative data (Scott et al., 2008). Women also scored higher on physical functioning, role functioning, emotional functioning and social functioning. In general, subscale scores do not differ greatly between the cancer types on any of the measures. Those in the ‘other’ cancer category however had lower physical functioning, role functioning and social functioning scores. Scores did not differ significantly between men and women on any measure.

Table 2. Descriptive statistics for the measures obtained (by cancer type)

	Mean(SD)			
Measure	**Breast (n = 91)**	**Prostate (n = 92)**	**Colorectal (n = 22)**	**Other (n = 46)**
AEE				
Weakness	2.0 (0.91)	1.9 (0.74)	2.1 (0.93)	2.2 (0.82)
Behaviour	2.9 (0.88)	3.1 (0.84)	3.1 (0.87)	3.1 (0.73)
Control	2.5 (0.81)	2.7 (0.82)	2.7 (0.75)	2.8 (0.83)
Rejection	2.3 (0.76)	2.5 (0.62)	2.5 (0.69)	2.7 (0.73)
CD-RISC	68.8 (13.98)	71.6 (15.65)	66.8 (12.71)	66.4 (15.78)
EORTC QLQ-C30				
Physical functioning	83.7 (15.75)	86.0 (18.17)	79.1 (16.75)	73.2 (24.48)[†]
Role functioning	83.5 (21.01)	77.4 (22.86)	81.1 (16.75)	67.4 (31.61) [†]
Cognitive functioning	79.9 (22.01)	83.5 (17.73)	78.0 (23.22)	72.4 (25.87)
Emotional functioning	78.6 (21.91)	81.8 (19.49)	66.3 (28.58)	69.4 (29.45)
Social functioning	81.1 (22.39)	75.4 (24.77)	73.5 (26.56)	68.8 (30.34) [†]
GHS	66.8 (20.73)	70.9 (23.47)	64.0 (18.96)	61.4 (19.51)
Fatigue	26.5 (20.54)	19.1 (19.09)	31.3 (22.38)	35.8 (29.15)
Nausea	11.9 (16.90)	9.2 (16.27)	15.2 (17.74)	15.6 (18.39)
Pain	15.8 (24.01)	12.7 (22.56)	19.7 (31.97)	23.9 (30.36)
Dyspnoea	15.8 (24.01)	12.7 (22.56)	19.7 (31.97)	23.7 (30.66)
Insomnia	9.9 (21.94)	4.7 (13.60)	7.6 (20.39)	30.4 (35.71)
Appetite loss	1.1 (5.98)	1.1 (5.95)	3.03 (9.80)	10.9 (28.16)
Constipation	34.4 (33.86)	29.3 (30.79)	30.3 (28.92)	34.1 (32.58)
Diarrhoea	26.4 (30.43)	19.2 (25.79)	31.8 (33.29)	36.9 (30.81)
Financial difficulties	16.8 (27.83)	18.5 (28.96)	33.3 (30.86)	23.2 (35.04)
SCL90-R				
Somatization	0.6 (0.65)	0.6 (0.72)	0.7 (0.66)	0.9 (0.97)
Obsessive compulsive	0.6 (0.59)	0.6 (0.65)	0.5 (0.68)	1.0 (0.98)
Interpersonal sensitivity	0.4 (0.63)	0.4 (0.58)	0.5 (0.72)	0.8 (0.91)
Depression	0.6 (0.67)	0.6 (0.63)	0.6 (0.72)	1.0 (0.93)
Anxiety	0.4 (0.52)	0.3 (0.49)	0.3 (0.52)	0.7 (0.94)
Hostility	0.2 (0.43)	0.4 (0.59)	0.4 (0.55)	0.6 (0.83)
Phobic anxiety	0.2 (0.50)	0.2 (0.42)	0.1 (0.18)	0.6 (0.86)
Paranoia	0.2 (0.43)	0.3 (0.52)	0.2 (0.54)	0.6 (0.88)
Psychoticism	0.2 (0.31)	0.7 (0.71)	0.2 (0.39)	0.5 (0.62)
Cognitive deficit	0.7 (0.71)	0.7 (0.71)	0.6 (0.63)	1.0 (1.01)
GSI	0.4 (0.51)	0.4 (0.51)	0.5 (0.52)	0.8 (0.81)

[†] Moderate subjective difference in scores between cancer types according to Verdonck-de Leeuw et al (2010)

Table 3. Descriptive statistics for the measures obtained (by gender)

	Mean (SD)	
Measure	**Male (n = 139)**	**Female (n = 112)**
AEE		
Weakness	2.0 (0.79)	2.0 (0.89)
Behaviour	3.1 (0.80)	2.9 (0.89)
Control	2.7 (0.79)	2.6 (0.83)
Rejection	2.5 (0.65)	2.4 (0.77)
CD-RISC	70.9 (14.78)	67.3 (14.87)
EORTC QLQ-C30		
Physical functioning	82.3 (21.19)[†]	82.1 (16.08)[†]
Role functioning	76.1 (25.85)[†]	80.5 (22.80)[†]
Cognitive functioning	81.9 (20.51)	76.9 (22.84)
Emotional functioning	77.9 (22.93)[†]	75.9 (24.87)[†]
Social functioning	73.5 (26.60)	79.3 (23.70)[†]
Fatigue	23.1 (22.31)	29.4 (22.91)
Nausea	11.5 (17.24)	12.4 (17.00)
Pain	16.3 (26.72)	16.7 (24.50)
Dyspnoea	16.2 (26.79)	13.4 (26.26)
Insomnia	10.1 (22.58)	3.9 (17.18)
Appetite loss	2.4 (10.34)	3.9 (17.18)
Constipation	28.8 (29.81)	36.3 (34.23)
Diarrhoea	24.5 (29.09)	28.3 (30.41)
Financial difficulties	19.7 (29.98)	20.5 (30.43)
Global health status	68.3 (22.92)	65.6 (19.80)
SCL90-R		
Somatization	0.6 (0.78)	0.7 (0.72)
Obsessive compulsive	0.7 (0.72)	0.7 (0.73)
Interpersonal sensitivity	0.4 (0.62)	0.5 (0.78)
Depression	0.6 (0.67)	0.6 (0.80)
Anxiety	0.4 (0.58)	0.4 (0.67)
Hostility	0.4 (0.61)	0.3 (0.59)
Phobic anxiety	0.2 (0.47)	0.3 (0.66)
Paranoid ideation	0.3 (0.56)	0.3 (0.62)
Psychoticism	0.3 (0.48)	0.3 (0.47)
Cognitive deficit	0.7 (0.76)	0.8 (0.80)
GSI	0.5 (0.55)	0.6 (0.60)

[†] Result significantly higher than normative data

Mean scores on the measure subscales by treatment type and number of treatments are shown in Table 4. Mean scores on the EORTC QLQ-C30, SCL90-R, AEE and CD-RISC did not differ significantly between treatment types or number of treatments.

Table 4. Descriptive statistics for the measures obtained (by treatment type)

	Mean(SD)					
	Treatment			**Number of treatments**		
Measure	**Surgery (n = 134)**	**Chemotherapy (n = 46)**	**Radiotherapy (n = 179)**	**1 (n = 153)**	**2 (n = 69)**	**3 (n = 22)**
AEE						
Weakness	1.9 (0.86)	2.1 (1.01)	2.1 (0.87)	2.1 (0.82)	1.9 (0.76)	2.3 (1.21)
Behaviour	3.0 (0.844)	3.0 (0.91)	3.1 (0.85)	3.1 (0.87)	2.9 (0.73)	3.1 (1.05)
Control	2.6 (0.76)	2.7 (0.86)	2.7 (0.84)	2.7 (0.83)	2.6 (0.77)	2.7 (0.88)
Rejection	2.4 (0.68)	2.5 (0.72)	2.5 (0.74)	2.5 (0.71)	2.5 (0.67)	2.5 (0.82)
CD-RISC	68.9 (14.65)	66.5 (16.54)	69.4 (15.27)	69.9 (14.89)	68.1 (15.10)	67.6 (16.02)
EORTC QLQ-C30						
Physical functioning	85.3 (15.74)	82.9 (14.92)	80.2 (19.77)	82.4 (19.99)	83.2 (16.75)	81.8 (14.71)
Role functioning	80.1 (22.43)	78.6 (25.26)	78.9 (25.01)	75.9 (24.83)	82.1 (23.27)	83.3 (21.82)
Cognitive functioning	82.3 (18.93)	77.2 (22.86)	78.1 (22.22)	79.9 (20.99)	79.9 (21.69)	79.5 (21.16)
Emotional functioning	78.1 (23.04)	75.4 (23.86)	77.2 (23.59)	75.9 (24.82)	80.3 (21.09)	75.4 (23.91)
Social functioning	77.7 (24.09)	73.9 (26.91)	76.6 (25.38)	75.1 (25.87)	79.7 (23.02)	76.5 (26.55)
GHS	68.8 (20.83)	65.2 (16.61)	65.7 (21.79)	67.4 (22.82)	68.1 (20.46)	63.3 (16.99)
Fatigue	22.8 (20.72)	31.9 (19.54)	27.9 (23.24)	24.3 (22.76)	26.1 (23.24)	31.3 (16.67)
Nausea	11.1 (16.34)	13.4 (19.76)	12.9 (17.97)	11.1 (16.33)	10.4 (14.32)	18.2 (24.07)
Pain	12.9 (22.73)	15.2 (20.73)	18.6 (16.21)	15.9 (26.78)	17.4 (23.98)	13.6 (19.67)
Dyspnoea	12.9 (22.73)	15.2 (20.73)	18.5 (26.27)	15.8 (26.83)	17.4 (23.99)	13.6 (19.67)
Insomnia	8.2 (12.41)	15.9 (26.97)	12.6 (25.01)	10.2 (22.38)	13.1 (27.54)	9.1 (18.34)
Appetite loss	1.9 (11.39)	2.9 (15.43)	4.1 (16.06)	2.6 (11.80)	5.3 (19.49)	0.0 (0.00)
Constipation	28.1 (30.27)	39.1 (33.19)	33.9 (33.23)	31.6 (32.39)	30.4 (31.17)	36.4 (33.97)
Diarrhoea	21.6 (26.57)	36.2 (33.57)	29.2 (30.12)	24.8 (29.50)	23.7 (27.47)	39.4 (31.93)
Financial	19.9 (30.07)	21.0 (31.71)	20.3 (31.07)	20.5 (29.89)	16.9 (29.49)	25.8 (35.53)
SCL90-R						
Somatization	0.5 (0.62)	0.7 (0.64)	0.8 (0.81)	0.6 (0.78)	0.7 (0.72)	0.7 (0.63)
OCD	0.6 (0.68)	0.8 (0.80)	0.7 (0.77)	0.7 (0.66)	0.7 (0.82)	0.6 (0.80)
Interpersonal sensitivity	0.4 (0.71)	0.6 (0.85)	0.5 (0.73)	0.4 (0.61)	0.6 (0.79)	0.5 (0.88)
Depression	0.6 (0.71)	0.8 (0.83)	0.8 (0.77)	0.6 (0.70)	0.7 (0.79)	0.7 (0.83)
Anxiety	0.4 (0.61)	0.5 (0.67)	0.5 (0.65)	0.4 (0.59)	0.5 (0.69)	0.5 (0.65)
Hostility	0.4 (0.63)	0.3 (0.65)	0.4 (0.63)	0.4 (0.55)	0.4 (0.69)	0.4 (0.72)
Phobic anxiety	0.2 (0.56)	0.4 (0.79)	0.3 (0.63)	0.2 (0.46)	0.4 (0.70)	0.3 (0.80)
Paranoia	0.3 (0.53)	0.4 (0.73)	0.4 (0.62)	0.3 (0.57)	0.3 (0.63)	0.4 (0.64)
Psychoticism	0.3 (0.46)	0.3 (0.38)	0.3 (0.48)	0.3 (0.49)	0.3 (0.49)	0.3 (0.35)
Cognitive deficit	0.7 (0.74)	0.8 (0.87)	0.8 (0.82)	0.7 (0.72)	0.8 (0.84)	0.8 (0.91)
GSI	0.4 (0.55)	0.6 (0.63)	0.6 (0.61)	0.5 (0.55)	0.6 (0.63)	0.6 (0.64)

3.4. Correlation analysis

Table 5 shows the results of the correlations between the AEE, CD-RISC, SCL-90R and EORTC QLQ-C30 subscales. In keeping with the first hypotheses, there were significant, negative associations between the AEE weakness subscale and physical functioning (r = -.193, p = 0.02), cognitive functioning (r = -.149, p = 0.018), emotional functioning (r = -.179, p = 0.04) and global health status (-.170, p = 0.007). AEE weakness was positively associated with nausea (r = .153, p = 0.015), pain (r = .155, p = 0.014), dyspnoea (r = .152, p = 0.016), appetite loss (r = .163, p = 0.010) and diarrhoea (r = .153, p = 0.016) on the EORTC QLQ-C30. The behaviour subscale was significantly negatively correlated with physical functioning (r = -.165, p = 0.009), role functioning (r = -.145, p = 0.022), emotional functioning (r = -.287, p = 0.000) and cognitive functioning (r = -.239, p = 0.000). The behaviour subscale was positively associated with fatigue (r = .183, p = 0.004), nausea (r = .212, p = 0.001), pain (r = .215, p = 0.001), dyspnoea (r = .215, p = 0.001), constipation (r = .218, p = 0.001), and diarrhoea (r = .233, p = 0.000). The control subscale was negatively associated with physical functioning (r = -.155, p = 0.014), role functioning (r = -.149, p = 0.018), cognitive functioning (r = -.141, p = 0.001), and emotional functioning (r = -.136, p = 0.031), and positively associated with nausea (r = .125, p = 0.048), pain (.157, p = 0.013), dyspnoea (r = .152, p = 0.016), and diarrhoea (r = .130, p = 0.04). The social rejection subscale was negatively associated with physical functioning (r = -.251, p = 0.000), role functioning (r = -.290, p = 0.000), cognitive functioning (r = -.206, p = 0.001), emotional functioning (r = -.269, p = 0.000), social functioning (r = -.264, p = 0.000) and global health status (r = -.306, p = 0.000), and positively associated with fatigue (r = .234, p = 0.000), nausea (r = .160, p = 0.011), appetite loss (r = .201, p = 0.001), constipation (r = .153, p = 0.015), diarrhoea (r = .254, p = 0.000), and financial difficulties (r = .173, p = 0.006). There were significant, positive associations between all AEE subscales and SCL90-R subscales. In keeping with the second hypothesis, CD-RISC scores were significantly, negatively correlated with the weakness (r = -.191, p = 0.002), behaviour (r = -.186, p = 0.003) and rejection subscales (r = -.211, p = 0.001) of the AEE.

Table 5. Spearmans Rho correlations between AEE, CD-RISC, EORTC QLQ-C30 and SCL90-R subscales

		AEE subscale			
Measure	**Subscale**	**Weakness**	**Behaviour**	**Control**	**Social rejection**
CD-RISC	Total	-.191**	-.186**	-.097	-.211**
EORTC	Physical functioning	-.193**	-.165**	-.155**	-.251**
	Role functioning	-.123	-.145*	-.149*	-.290**
	Cognitive functioning	-.149*	-.239**	-.141*	-.206**
	Emotional functioning	-.179**	-.287**	-.136*	-.269**
	Social functioning	-.072	-.066	-.047	-.264**
	Fatigue	.090	.183**	.095	.234**
	Nausea	.153*	.212**	.125*	.160*
	Pain	.155*	.215**	.157*	.121
	Dyspnoea	.152*	.215**	.152*	.116
	Insomnia	.065	.053	-.050	.061
	Appetite loss	.163**	.107	.016	.201**
	Constipation	.053	.218**	.119	.153*
	Diarrhoea	.153*	.233**	.130*	.254*
	Financial	.039	.046	.042	.173**
	Global health status	-.170**	-.106	-.119	-.306**
SCL90-R	Somatization	.171**	.261**	.191**	.279**
	Obsessive compulsive	.187**	.285**	.191**	.382**
	Interpersonal sensitivity	.145*	.295**	.139*	.337*
	Depression	.172**	.339**	.192**	.396**
	Anxiety	.214**	.307**	.155*	.330**
	Hostility	.184*	.269**	.170**	.301**
	Phobic anxiety	.241**	.278**	.185**	.353**
	Paranoid ideation	.222**	.244**	.243**	.386**
	Psychoticism	.188**	.281**	.179**	.362**
	Cognitive deficit	.134*	.251**	163**	.301**
	GSI	.191**	.340**	.193**	.368**

*p < 0.05 **p <0.01

3.5. Regression analysis

Univariate regression analyses were carried out between age and the dependent variables, time since treatment and the dependent variables, and time since diagnosis and the dependent variables. Age was found to be a significant predictor of the Global Symptom Index on the SCL90-R (F(1, 244) = 11.85, p < 0.001), but was not a significant predictor of EORTC QLQ-C30 scores, CD-RISC scores or the AEE subscale scores. Time since treatment and time since diagnosis were not significant predictors of any of the dependent variables.

Hierarchical multiple-regression analysis was performed to examine whether attitude towards emotional expression and psychological resilience predicted quality of life and psychosymptomatology. As shown in Tables 6 and 7, age explained 4.3% of the variance in psychosymptomatology. The addition of resilience explained 9.2% of the variance in quality of life, and 15% of the variance in psychosymptomatology. The addition of attitude towards emotional expression increased the explained variance to 14.1% for quality of life, and 24% for psychosymptomatology. Only the social rejection subscale of the AEE was a significant contributor to the model. The social rejection subscale of the AEE significantly predicted CD-RISC score (R^2 = .73, *F*(1, 247) = 11.95, *p* < .001), but the remaining AEE subscales did not.

Table 6. Hierarchical multiple regression analysis for the predictors of quality of life (Global Health Status) in cancer patients

Step/predictor	**R^2**	**Adjusted R^2**	**R^2 change**	**B**	**SE**	**β**	**t**
Step 1	.096	.092**					
Resilience				.449	.088	.310**	5.13
Step 2	.375	.141**					
Resilience				.387	.090	.267**	4.32
AEE							
Weakness				-1.37	2.01	-.053	-.684
Behaviour				1.89	1.91	.074	.998
Control				1.77	2.21	.067	.425
Social rejection				-7.32	2.38	-.239*	-3.07

* $p < 0.01$ ** $p < 0.001$

Table 7. Hierarchical multiple regression analysis for predictors of psychosymtomatology (Global Symptom Index) in cancer patients

Step/predictor	**R^2**	**Adjusted R^2**	**R^2 change**	**B**	**SE**	**β**	**t**
Step 1	.047	.043**					
Age				-.011	.003	-.22***	-.344
Step 2	.16	.15**	0.11**				
Age				.010	.003	-.199***	-.337
Resilience				-.013	.002	-.334***	-5.65
Step 3	.27	.24**	0.09**				
Age				-.012	.003	-.227***	-3.97
Resilience				-.010	.002	-.252**	-4.35
AEE							
Weakness				.048	.051	.069	.945
Behaviour				.079	.048	.115	1.63
Control				.020	.056	.028	.353
Social rejection				.165	.060	.199	2.74*

* $p < 0.01$ ** $p < 0.001$

Table 8 displays the results of t-tests conducted using the median split for AEE social rejection score to form ‘strong’ versus ‘weak belief subgroups. Those with a strong belief that emotional expression (EE) will lead to social rejection had lower psychological resilience ($t = 0.22$, $p = .009$), physical functioning ($t = 2.61$, $p = 0.01$), cognitive functioning ($t = 2.57$, $p = 0.011$), role functioning ($t = 4.03$, $p = 0.000$), emotional functioning ($t = 3.55$, $p = 0.000$) and social functioning ($t = 3.97$, $p = 0.000$). They also had significantly higher levels of fatigue ($t = -2.53$, $p = 0.012$), pain ($t = -1.65$, $p = 0.011$) appetite loss ($t = -2.51$, p =

0.013), diarrhoea (t= -3.46, p = 0.001), financial difficulties (t = -2.27, p = 0.024), and all of the SCL90-R subscales were significantly higher in this group.

Table 8. Resilience, quality of life and psychological symptoms according to AEE social rejection belief (t-test results)

Dependent variable		**Weak belief that EE will lead to social rejection (n = 121)**	**Strong belief that EE will lead to social rejection (n = 129)**		
		Mean (SD)	**Mean (SD)**	**t**	**p**
CD-RISC	**Total**	71.81 (14.24)	66.88 (15.21)	0.22	**0.009**
EORTC QLC-30	**Physical functioning**	85.34 (19.14)	79.12 (18.54)	2.61	**0.010**
	Role functioning	84.29 (20.78)	72.09 (26.45)	4.03	**0.000**
	Cognitive functioning	83.33 (19.84)	76.37 (22.89)	2.57	**0.011**
	Emotional functioning	82.44 (21.38)	71.96 (24.95)	3.55	**0.000**
	Social functioning	82.51 (82.51)	70.03 (26.38)	3.97	**0.000**
	Fatigue	22.22 (21.89)	29.46 (23.10)	-2.53	**0.012**
	Nausea	10.19 (16.29)	13.56 (17.77)	-1.56	0.120
	Pain	13.77 (23.44)	19.12 (27.57)	-1.65	**0.011**
	Dyspnoea	13.77 (23.44)	19.01 (27.65)	-1.61	0.109
	Insomnia	9.92 (22.62)	13.18 (25.82)	-1.06	0.291
	Appetite loss	0.83 (5.20)	5.17 (18.38)	-2.51	**0.013**
	Constipation	28.37 (30.93)	35.66 (32.86)	-1.80	0.073
	Diarrhoea	19.56 (26.41)	19.01 (27.65)	-3.46	**0.001**
	Financial difficulties	15.70 (27.24)	24.29 (32.21)	-2.27	**0.024**
	Global health status	72.25 (22.57)	62.08 (19.49)	3.82	**0.000**
SCL90-R	**Somatization**	0.47 (0.60)	0.85 (0.84)	-4.13	**0.000**
	Obsessive compulsive	0.44 (0.50)	0.89 (0.82)	-5.29	**0.000**
	Interpersonal sensitivity	0.25 (0.42)	0.66 (0.83)	-4.86	**0.000**
	Depression	0.45 (0.51)	0.93 (0.83)	-5.58	**0.000**
	Anxiety	0.26 (0.44)	0.59 (0.73)	-4.36	**0.000**
	Hostility	0.23 (0.48)	0.50 (0.66)	-3.61	**0.000**
	Phobic anxiety	0.11 (0.31)	0.40 (0.70)	-4.10	**0.000**
	Paranoid ideation	0.14 (0.30)	0.51 (0.73)	-5.29	**0.000**
	Psychoticism	0.18 (0.34)	0.44 (0.54)	-4.35	**0.000**
	Cognitive deficit	0.54 (0.62)	0.93 (0.86)	-3.99	**0.000**
	GSI	0.33 (0.38)	0.69 (0.67)	-5.18	**0.000**

4. DISCUSSION

4.1. Summary of findings

The current study aimed to examine the relationship between attitude towards emotional expression, psychological resilience and psychological wellbeing in a group of cancer survivors. Firstly, results replicate previous findings that resilience predicts quality of life and psychological symptoms both in those with cancer (Sharpley, Bitsika, Wootten & Christic, 2014; Mi Ryu & Yi, 2013; Min et al., 2013), other chronic conditions (Sturgeon & Zautra, 2010; Yi et al., 2010) and in healthy individuals (Bonnanno, 2005; Tugade, Fredericksen & Barrett, 2004). According to Sharpley et al. (2014) resilience may act as a 'buffer' against distress, depression in particular. There are several other potential 'buffers' reported in previous cancer research, such as hope (Ho, Ho, Bonanno, Chu & Chan, 2010), social support (Alferi et al., 2001; Kornblith et al., 2001; Kroenke, Kubzansky, Schernhammer, Holmes & Kawachi, 2006; Sammarco, 2001), and spirituality (Breitbart, 2001; Jenkins & Pargament, 2008; Stefanek, McDonald & Hess, 2004; Laubmeier, Zakowski & Bair, 2004). The present study supports previous literature that suggests that psychological resilience measured by the CD-RISC may also play a role in helping to prevent individuals with cancer developing psychological difficulties.

Secondly, the present study found that having the belief that expressing your emotions will lead to social rejection is associated with lower resilience, lower quality of life (including physical pain) and more psychological symptoms. Research indicates that one of the most common concerns raised by those affected by cancer is fear of social rejection and stigma (Fallowfield, 1997; Gray, Doan & Church, 1991). Those with cancer have reported non-disclosure of their cancer due to a sense of wanting to protect other people from embarrassment (Frank, 1995; Waskul & van der Riet, 2002). Existing research literature focusing on fear of negative evaluation from others suggests that shame is a predictor of greater psychological distress (Gilbert, 1992, 1998a, b). Those who experience feelings of shame have been found to adopt non-assertive and submissive behaviours, and therefore may find it difficult to express their emotions to others as a problem solving strategy (Arrindell *et al*., 1990; Gilbert *et al*., 1994; Allan and Gilbert, 1997; Gilbert and McGuire, 1998). The findings of the current study therefore support previous research findings that fear of social rejection is related to psychological distress.

4.2. Strengths and limitations

This study is the first study to explore the link between attitude towards emotional expression and psychological resilience in cancer survivors. Results support the notion that the belief that emotional expression will lead to social rejection predicts psychological resilience in this population. These findings add to the growing literature on emotional expression and support the hypothesis that conflict over expressing one's emotions is an important factor in emotional psychological wellbeing and physical health. Post hoc power calculations indicated that the sample size was sufficiently large to find key effects, whilst minimising type I and type II errors.

This study had several limitations. Non-responders were not asked to clarify why they did not wish to take part, which may have shed some light on the differences between responders and non-responders and how this could have affected the results. Secondly, this study mainly included participants who had prostate and breast cancer. Generalising the results to those with other types of cancer would therefore be problematic. Similarly, this study focused on individuals who had received treatment for cancer, with no recurrent disease or metastases. Psychological outcomes are likely to differ during times of acute stress such as after initial diagnosis, during treatment, after treatment and after recurrence. The results of the present study cannot be generalised to other time points during the cancer journey. Those with metastatic disease could possibly have lower levels of resilience (Min et al., 2013) and may differ in terms of their attitude towards emotional expression. The EORTC QLQ-C30 scores for men on physical functioning, role functioning and emotional functioning are higher than normative data (Scott et al., 2008). Women also scored higher on physical functioning, role functioning, emotional functioning and social functioning. Mean SCL90-R scores in those with breast cancer are lower in this study than found in previous research (Fafouti et al., 2010; Pan et al., 2013). Resilience scores however are significantly lower than those found in a previous prostate cancer study (Sharpley, Bitsika, Wootten & Christie, 2014). The present sample therefore appears to be higher functioning than previous samples, apart from on psychological resilience. Several individuals (n = 4) contacted the researchers and stated that they were either too physically or mentally unwell to participate.

The participants in this study had mostly undergone radiotherapy, alone or alongside other cancer treatments (71%). This was due to the assistance of a nurse who delivered radiotherapy in identifying patients through their lists of participants who had recently received radiotherapy. Although this method of convenience sampling limits the generalisability of its findings to those who receive chemotherapy or surgery alone, steps were taken to ensure that the participants selected were appropriate for the study aims. There was no significant difference in resilience, quality of life or psychological symptoms between treatment types and number of treatments in the present study. Although physical pain was measured using the EORTC QLQ-C30, pain ratings were not controlled for in the analysis, meaning that it remains unclear whether physical pain influences attitude towards emotional expression, resilience or psychological wellbeing. The present study was cross sectional and therefore did not assess directional factors. It remains unclear whether resilience is a determinant of or a response to stress, as assessment of directional factors was not possible in this study.

There are several variables which may have confounded the results of the present study. Social support was also not assessed. Lack of social support has been linked to poor psychological wellbeing in cancer survivors (Alferi et al., 2001; Kornblith et al., 2001; Kroenke, Kubzansky, Schernhammer, Holmes & Kawachi, 2006; Sammarco, 2001) and social barriers are thought to have adverse effects on emotional expression (Zakowski et al., 2004; Zakowski et al., 2003). An individual may have a healthy attitude towards emotional expression but they may not have adequate social support to facilitate the expression of their emotions.

4.3. Clinical implications

If the findings of the present study prove to be replicable in similar populations, they have a number of clinical implications. Firstly, the results indicate that screening for levels of resilience soon after diagnosis could be beneficial in identifying which patients may benefit from an intervention to help develop their resilience skills and strategies. This conclusion was also made by Sharpley et al. (2014). Interventions which focus on improving individual’s resilience could be of benefit in making them less vulnerable to psychological distress. A cognitive behavioural approach to resilience training, which assists participants in how to cope with stressors, has been employed successfully in chronic pain (Karoly & Reuhlman, 2006) and depression (Padesky & Mooney, 2012) and could be applied in cancer populations. An RCT in breast cancer survivors found that two 90 minute group sessions of stress management and resilience training (SMART) significantly improved resilience and reduced perceived stress and anxiety (Loprinzi, Prasad, Scrhroeder, & Sood, 2011). This intervention focused on cultivating mindfulness skills and skills such as gratitude, compassion, acceptance, forgiveness, and higher meaning.

Secondly, interventions focusing on attitude towards emotional expression could also be helpful for symptom management. The majority of existing research indicates that those who express their negative emotions are more likely to experience less distress than those who suppress them (e.g. Iwamitsu et al., 2002; Iwamitsu et al., 2003; Stanton et al., 2002).

Porter, Keith, Lipkus and Hurwitz (2005) found that patients who had high levels of ambivalence towards emotional expression engaged in more catastrophising and reported higher levels of pain behaviours and poorer quality of life. Psychological interventions may therefore benefit from considering factors such as how the patient communicates their physical and emotional pain to others according to Porter et al. (2005). NICE guidelines (2004) state that around the time of a cancer diagnosis, around half of all patients experience severe levels of depression and anxiety, and in the year after diagnosis, around one in ten. Patients' psychological symptoms are often not detected and therefore they are often not offered access to needed services (MORI, 1992). Cancer survivors who have low levels of psychological resilience and a more negative attitude towards emotional expression may particularly benefit from psychological support, in order to help buffer against psychological distress.

4.4. Future research

The present study highlights several areas for future research to explore. Further research is needed to establish whether findings would be similar in other cancer types, as well as in those with metastases or those receiving palliative care. Similarly, as all participants had finished treatment, future research could consider whether the relationships found between attitude towards emotional expression, resilience and psychological wellbeing would be replicated after diagnosis or during treatment. Previous research has suggested that there are four trajectories that emerge in the first year after traumatic life events: a resilient trajectory whereby normative psychological functioning is maintained; chronic distress characterised by high levels of distress; delayed distress characterised by normative functioning followed by high levels of distress and recovery, where initial high levels of distress reduce to normative levels (Bonanno et al., 2002; Bonanno, Wortman & Nesse, 2004; Bonanno, Galea, Bucciarelli & Vlahov, 2006; 2007; Norris, Tracy & Galea, 2009). Cancer studies have found that these four adaptation trajectories apply to psychological adjustment in cancer populations (Helgeson et al., 2004;

Hou, Law, Yin & Fu, 2010). Ideally, longitudinal research is needed in which measures are completed at several time points throughout the illness trajectory. This would facilitate a better understanding of how attitude towards emotional expression relates to resilience and psychological outcome. A prospective study would inform researchers whether resilience predates cancer diagnosis and treatment, protects against psychological difficulties post-cancer, and whether resilience can develop further following cancer.

Tusaie and Dyer (2004) assert that while previous research has explored several common characteristics in individuals who are resilient, further research needs to explore the dynamic interactions of these factors. Sharpley et al. (2014) used factor analysis to establish which aspects of resilience might be more powerful than others in helping prostate cancer patients cope with diagnosis and treatment. They concluded that ‘staying focused when under pressure’, ‘knowing where to turn for help during a crisis’, and ‘maintaining a humorous outlook in the face of problems’ were the most protective aspects of resilience in buffering against depression. Future research would benefit from examining these aspects further to establish whether these findings are robust.

At present, it is unclear how attitude towards emotional expression develops. Research has suggested that children who receive confusing messages about emotions from their carers can develop ambivalence towards emotional expression, as the child learns that negative emotional states are not acceptable (King, 1998). It is also largely unclear why a negative attitude towards emotional expression is linked to higher levels of psychological difficulty, further research is needed to support the two hypothesised pathways of reduced coping (Tucker et al., 1999) and social support (King, 1998).

Given the finding that the belief that expressing one’s emotions can lead to social rejection was related to greater distress, further research in this area could benefit from measuring fear of negative evaluation in this population. Further research could also benefit from exploring the relationship between attitude towards emotional expression and social support in this population. Although an individual may have a healthy attitude towards emotional expression, they may not have people around them that they feel they can confide in. Sharpley et al. (2014) found that it is not only the emotional expression of the patient that is important in physical and psychological wellbeing but also the emotional expression of those close to them.

4.4. Conclusions

In conclusion, the results of the present study supports previous findings that psychological resilience ‘buffers’ against distress in cancer survivors. Furthermore, the belief that emotional expression will lead to social rejection predicts resilience and psychosymptomatology in the present sample. These findings suggest that addressing psychological resilience and the belief that expressing one’s emotions will lead to social rejection could be of psychological benefit to cancer survivors. The relative contribution of different aspects of psychological resilience requires further exploration. Further research is also needed to establish whether findings would be similar in those with metastases or those receiving palliative care, and after diagnosis or during treatment.

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PUBLIC DOMAIN PAPER

WRITTEN EMOTIONAL EXPRESSION, ATTITUDE TOWARDS EMOTIONAL EXPRESSION AND RESILIENCE IN CANCER SURVIVORS

1. INTRODUCTION

Although the treatments currently available for cancer can prolong life and potentially treat the disease, both the disease and the treatments themselves can cause substantial suffering, impairments in quality of life (Carlson et al., 2004; Zabora et al., 1997) and psychosocial functioning (Pitceathly & Maguire, 2003; Badr & Taylor, 2005; Garos, Kluck, & Aranoff, 2007). Although many cancer patients suffer from emotional distress and poorer quality of life, the psychosocial factors which contribute towards distress vulnerability in cancer patients remains poorly understood (Min et al., 2013). The way in which individuals with chronic disease process and express their emotions has been previously linked to their psychological adjustment to the disease. It has been argued that emotional regulation, defined as 'the individuals' efforts to control which emotions they have, when they have them, and how they express them' (Gross, 2002), may influence how patients adapt both physically and psychologically to their chronic disease (Porter, Keith, Lipkus and Hurwitz, 2005). 'Resilience' has become an increasingly popular area of study in the social and medical sciences. Stewart and Yuen (2011) state that 'resilience is the capacity of individuals to maintain, or regain their mental health in the face of significant adversity, including physical illness.'

2. LITERATURE REVIEW

Since James Pennebaker began studying expressive writing in college students in the 1980's, over 200 studies have been conducted in this area. Expressive writing interventions (EWI) instruct participants to write down their deepest thoughts and feelings about a life event that is considered stressful (Pennebaker & Beall, 1986). Craft et al (2013) argue that when a person who has a life-altering experience uses expressive writing, the individual is given the opportunity to reflect on and perhaps see their experiences in a new light (Mezirow, 1987, Pennebaker et al., 1997), and they are also being consciously caring towards themselves (Watson, 2002). Findings of 17 research studies published in the last 15 years suggests that use of expressive writing does not appear to influence the majority of psychological variables that were assessed in the studies included in this review. Despite this however, results indicate that expressive writing is linked to changes in physical symptoms and decreased medical use for patients. Individual differences in general psychological wellbeing factors did not significantly influence the outcome of the EWI interventions. It appears that those who have a poorer quality of life and lower mood improved equally following the EWI to those who had a better mood and quality of life. This finding is in contrast with previous research which has suggested that psychological intervention in cancer patients is usually more beneficial for people with poorer psychological health and quality of life (Naaman et al., 2009; Ross et al., 2002; Schneider et al., 2010; Sheard & Maguire, 1999; Tamagawa et al., 2012).

3. EMPIRICAL PAPER

The way in which individuals with chronic disease process and express their emotions has been previously linked to their psychological adjustment to the disease. There have not been any studies to date which have explored whether attitude towards emotional expression is linked to psychological resilience in cancer survivors. This study aimed to investigate the relationship between attitude towards emotional expression, resilience and psychological wellbeing in cancer survivors. It was hypothesised that those with lower resilience and a more negative attitude towards emotional expression would have poorer quality of life and more psychological symptoms.

3.1. Method

3.1.1. Participants

Participants were 251 individuals (139 male, 112 female) with a cancer diagnosis, having received cancer treatment in the previous eight months. None of the participants had been diagnosed with metastases. Cancer types included prostate cancer (36.6%), breast cancer (36.2%), colorectal cancer (8.8%), and those in an ‘other’ cancer group (18.3%). Subscale scores did not differ greatly between the cancer types on any of the measures.

3.2. Procedure

Participants completed psychological measures at one time point; of attitude towards emotional expression, psychological resilience, quality of life and psychological symptoms. These were:

- A demographic questionnaire
- The Attitude Towards Emotional Expression Scale (AEE; Joseph, Willians, Irwing & Cammock, 1994)
- The Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003)
- The Symptom Checklist 90 Revised (SCL-90-R; Derogatis, 1977; 1994)
- *European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire* (EORTC QLQ-C30; Aaronson et al., 1993)

4. Results

- Age explained 4.3% of the variance in psychosymptomatology. The addition of resilience explained 9.2% of the variance in quality of life, and 15% of the variance in psychological symptoms. The addition of attitude towards emotional expression increased the explained variance to 14.1% for quality of life, and 24% for psychological symptoms. Only the social rejection subscale of the AEE was a significant contributor to the models.
- Those with a strong belief that emotional expression will lead to social rejection had lower psychological resilience, physical functioning, cognitive functioning, role functioning, emotional functioning and social functioning. They also had significantly higher levels of fatigue, pain, appetite loss, diarrhoea, financial difficulties, and all of the SCL90-R subscales were significantly higher in this group.

5. Conclusions

Results replicate previous findings that resilience predicts quality of life and psychological symptoms in those with cancer (Sharpley, Bitsika, Wootten & Christic, 2014; Mi Ryu & Yi, 2013; Min et al., 2013). Secondly, the present study found that having the belief that expressing your emotions will lead to social rejection is associated with lower resilience, lower quality of life (including physical pain) and more psychological symptoms. Screening for levels of resilience soon after diagnosis could be beneficial in identifying which patients may benefit from an intervention to help develop their resilience skills and strategies. Secondly, interventions focusing on attitude towards emotional expression could also be helpful for symptom management.

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APPENDICES

LITERATURE REVIEW

APPENDIX A

Pennebaker's generic protocol

Pennebaker’s expressive writing protocol (Pennebaker, 1994)

APPENDIX B

Data extractions

(all data was extracted directly from published studies)

Title	**Written emotional disclosure for women with ovarian cancer and their partners: randomised controlled trial**
Authors	Arden-Close, E., Gidron, Y., Bayne, L. and Moss-Morris, R.
Year	2013
Journal	Psycho-Oncology
Country of origin	UK
Aims	Investigate the effectiveness of guided writing in cancer patients and their partners. Also tested two theories that may account for beneficial effects of written emotional disclosure, the cognitive processing hypothesis and the social interaction hypothesis.
Design	'Patients and their partners (N= 102 couples) were randomised to write at home for 15 min a day over 3 days about the patient's diagnosis and treatment using the GDP or what the patient did the previous day (control).'
Sample (patient group)	A group of 102 couples where one partner had ovarian cancer. 'Participants were members of a UK charity for patients with ovarian cancer who had consented to be contacted by third parties, and their spouses/partners.'
Sample size	102 couples where one partner had ovarian cancer. 53 couples in the experimental condition, 49 in the control.
Inclusion/exclusion criteria	Not reported.
Ethnicity	Not reported.
Age range	'Writing group mean age 53.02 (10.30) comparison group 57.39 (8.09). 'GDP participants were significantly younger than controls, and more time had passed since their diagnosis. Therefore, patient age and time since diagnosis were added as covariates.'
Treatment type	Mixed
Stage of cancer	Mixed. Mostly stage 3.
EWI description	'The GDP protocol was as follows: Day 1: Describe the diagnosis and treatment chronologically and what led to what, without mentioning emotions. Day 2: Part 1: Describe how you felt and what you thought at the time of the diagnosis. Part 2: What impact has your diagnosis and treatment had on your life, and has it caused you to change priorities? Day 3: How do you currently feel and think about the diagnosis and treatment? Are your current thoughts and feelings the same as at diagnosis? Would you be able to cope with similar situations better because you have experienced it? Spouses received similar instructions regarding their partner's cancer and their own responses/reflections.'
Follow-up period	Baseline, three months, 6 months
Measures	The Functional Assessment of Cancer Therapy—General The Perceived Stress Scale (PSS)
Data analysis	'To determine equivalence between groups on demographic and biomedical characteristics, independent samples t-tests were used for continuous data and w2 analysis for categorical data. To test the research questions, 2x3 mixed-design repeated measures analyses of covariances were performed, with group (GDP, control) as the between-subjects factor and time (baseline, 3- and 6-month follow-ups) as the within-subjects factor.'
Findings	'Contrary to expectations, despite including partners, there was no effect of the GDP on the primary outcomes.'

Manipulation checks	'Guided Disclosure Protocol participants used more positive and negative emotion and insight words on days 2 and 3 than controls. They also rated their essays as more personal and revealing of emotions across all 3 days (all p values <0.01).'
Conclusions	'This study aimed to determine the effect of the GDP on perceived stress and QoL in ovarian cancer couples. However, contrary to expectations, despite including partners, there was no effect of the GDP on the primary outcomes. Approximately half of the participants experienced a recurrence during the study. Written disclosure may be ineffective for dealing with recurrent stressors, as it does not teach strategies for dealing with possible recurrences. Similarly, the cognitive processing hypothesis was not supported. Intrusive thoughts even increased in partners in the GDP group. Similarly, the social interaction hypothesis was not supported. There was no effect of the GDP on communication. Distressed couples are less likely to agree to participate in such studies [48], and Couples' Illness Communication Scale scores at baseline were high, suggesting that communication was close to ceiling level.'
Moderators	'Change in illness-related communication moderated the effect of group on QoL in patients. The interaction explained 2.3% of the variance in QoL at 3-month followup (B=1.17, SE=0.52, b=0.20; F(1, 85) = 5.16, p=0.03).'
Identified limitations	'Approximately half of the participants experienced a recurrence during the study. Written disclosure may be ineffective for dealing with recurrent stressors, as it does not teach strategies for dealing with possible recurrences. First, for ethical reasons, no demographic information was collected about non-responders, preventing comparisons with responders. Second, the power analysis was based on an anticipated large effect size. Basing it on effects of written disclosure in cancer from previous studies (with smaller effects) might have been more appropriate. Third, medical data were self-reported. Although the high correlation between patient- and consultant-reported CA 125 levels suggested it was accurate, medical information would ideally have been validated against records. Fourth, the participants were members of a support charity, thus possibly more motivated to engage in the study than the general population with ovarian cancer because of the use of more active coping strategies [51]. Finally, the PSS may not have captured cancer-related distress sufficiently. The full IES might have been a more appropriate measure of cancer related distress. Avoidant coping as measured by the IES avoidance subscale could also have mediated the results.'
Future research	'Several issues need to be addressed in future research. Fifteen minutes was often insufficient for participants to describe their diagnosis and treatment. On day 1, participants should be invited to write until they feel they have completed all necessary details or be provided with, for example, 30 min. Also, the results were based on a cancer that affects only women. The effects of structured writing about cancer/other chronic illnesses where the man is the patient need to be determined.'

Title	**Expressive writing in early breast cancer survivors.**
Authors	Craft, M. A., Davis, G. C., & Paulson, R. M.
Year	2013
Journal	*Journal of Advanced Nursing*, *69*(2), 305-315.
Country of origin	USA
Aims	Investigate whether or not expressive writing improves the quality-of-life of early breast cancer survivors. And whether or not the type of writing prompt makes a difference in results.

Design	Randomised controlled trial. Participants were randomized into one of four groups: a control group (no writing) or one of three expressive writing groups: breast cancer trauma, any self-selected trauma and facts related to breast cancer.
Sample (patient group)	The final analysis included 30 in the control group and between 19–26 in each of the writing groups.
Sample size	Breast cancer trauma condition (n=26), self-selected trauma condition (n=19), facts only condition (n=22), control (n=30).
Inclusion/exclusion criteria	Inclusion criteria: diagnosis of breast cancer, either invasive or non-invasive, definitive treatment (surgery, chemotherapy and/or radiation therapy) completed, time from diagnosis less than 2 years, able to speak and write English and physically able to write either by hand or with a word processor for 20-minute periods. Exclusion criteria: Recurrent or metastatic breast cancer, their mental status precluded participation, or if they had ever been diagnosed and/or treated for clinical depression.
Ethnicity	92% Caucasian
Age range	32–78 years with a mean of 56 years (SD = 10.51).
Treatment type	Surgery, chemotherapy and/or radiation therapy
Stage of cancer	Most were at early stages (0, I or II) of breast cancer, whereas 4.1% were at Stage III. Recurrent or metastatic breast cancer excluded
EWI description	'Participants wrote 20 minutes a day for 4 consecutive days. The writing intervention followed the paradigm established by Pennebaker et al. (1989) and used by most researchers in expressive writing. The three writing groups were instructed to write with individualized assignments on (a) deepest thoughts and feelings about breast cancer, (b) deepest thoughts and feelings about a self-selected worst trauma, or (c) facts of treatment only – day 1, diet, day 2, exercise regimen, day 3, sleep pattern and day 4, medications.'
Follow-up period	1 month and 6 months
Measures used	QOL. 'FACT-B'. 'This 37-item self-report instrument, contains 27 general items plus 10 breast cancer-specific items (Brady et al. 1997). Subscales include physical well-being, social/family well-being, emotional well-being and functional well-being, the 10 additional items address physical and psychological concerns related to breast cancer.'
Timing of measures	Measured at baseline, 1 and 6 month follow ups.
Data analysis	'Initially, analysis of variance (ANOVA) tested the four study groups for important differences. Multivariate analysis of variance (MANOVA) analysed the combined effect of time and group assignment on the outcome variable. Changes in QOL over the three time periods were analysed using paired t-tests. Multiple regression was used to answer the question of whether or not expressive writing contributed to QOL. In addition, intention-to-treat (ITT) analysis was used to test the hypotheses due to the high dropout rate between the T1 and T3 assessment periods'
Findings	'The results revealed a main effect of time, F(1,93) = 13.80, P < 0.001, partial n2 = 0.129. Additional analyses revealed that there were no important differences between groups at Time 1, F(3,93) = 0.20, P = 0.898, partial n2 = 0.006. There were, however, important differences between groups at Time 2, F(3,93) = 4.22, P = 0.008, partial n2 = 0.120. According to post-hoc tests, participants who wrote about facts regarding their breast cancer (group 4) had significantly higher QOL scores at Time 2 (mean = 119.62 SD 13.52) than those who did not write at all at Time 2 (mean = 104.38 SD 21.31). There was also a substantial time · group interaction, F(3,93) = 7.14, P < 0.001, partial n2 = 0.187 (See Table 1 for actual scores). Testing of Hypothesis 2 (H2) with a paired sample t-test revealed that participants who wrote about the trauma of their breast cancer experience had significantly higher QOL scores at Time 2 (mean = 114.83 SD 10.48) than at Time 1 (mean = 107.95 SD 9.26) t(25) = _5.88, P < 0.001. Furthermore, a paired sample t-test revealed that

	participants who wrote about the facts of their breast cancer experience had significantly higher QOL scores at Time 2 (mean = 119.62 SD.A separate repeated measures MANOVA was conducted to further examine the effect of time and group on the FACT-B, or QOL scores, at Time 1 and Time 3 (H2) (Figure 3). The results revealed an important time x group interaction, F(3,93) = 3.68, P = 0.015, partial n2 = 0.106. A paired sample t-test revealed that participants who wrote about the trauma of their breast cancer experience had significantly higher QOL scores at Time 3 (mean = 112.60 SD 9.12) than at Time 1 (mean = 107.95 D 9.26) t(25) = _2.77, P = 0.011. There was, however, no main effect of time, F(1,93) = 0.53, P = 0.470, partial n2 = 0.006, nor was there a main effect of group, F(3,93) = 0.434, P = 0.434, partialng2 = 0.029.'
Manipulation checks	None
Moderators	None
Conclusion	'Those who wrote about the trauma of their breast cancer had higher scores at T2 than those who did not write or those who wrote about any traumatic event. Those who wrote about the trauma of their breast cancer or facts about breast cancer had higher scores than those who did not write or those who wrote about any traumatic event. Those who wrote about facts of breast cancer and breast cancer trauma had higher change scores than the control group of no writing from T1–T2. No important change occurred for any of the groups from T2–T3. Those who wrote about breast cancer trauma and facts of breast cancer showed a greater positive change than did the other groups from T1–T3. The writing groups significantly contributed to QOL, with the exception of the group writing about any trauma at Time 3. Although the group who wrote about the facts only of their breast cancer was originally designed to control for researcher attention, it produced statistically significant results similar to the group instructed to write about thoughts and feelings related to the trauma of breast cancer. Beneficial outcomes may be gained through use of this technique. Even though the statistical gains were slight, the overall improvement of early cancer survivors using expressive writing to write about their breast cancer or the facts related to it show promise for this writing intervention as a treatment for improving QOL.'
Identified limitations	'Although the convenience sample used in this study limits the generalizability of its findings, steps were taken to assure that the participants selected were appropriate for the study aims. Because the study results might have been affected by the participant drop-out rate, ITT analysis was conducted to address possible bias of the study outcomes. Using the added analysis, the results were essentially the same when the non-completer's last score was used. Other methodological limitations include varying previous exposure to journaling and variance in attrition in the different groups which may indicate a preference for one way of writing over another.'
Future research	'In actuality, one might argue that writing about the physical aspects of breast cancer is not a neutral topic at all and may allow individuals to tap into some feelings they have been suppressing, perhaps in a very non-threatening way. For this reason, future research might benefit from structuring the cancer facts arm (or neutral topics arm) as a true intervention arm with the instructions including 'tell the story of your breast cancer by talking about diet, exercise, sleep and medications'.

Title	**Randomized Trial of Expressive Writing for Distressed Metastatic Breast Cancer Patients**
Authors	Catherine E. Mosher, Katherine N. DuHamel, Joanne Lam, Maura Dickler, Yuelin Li, Mary Jane Massie, and Larry Norton
Year	2012

Journal	Psychological Health 27(1): 88–100. doi:10.1080/08870446.2010.551212
Country of origin	New York, USA
Aims	'This study examines the health effects of expressive writing in an advanced breast cancer patient sample and extends prior work in several respects. First, only patients with clinically elevated distress participated in this trial. In previous expressive writing studies, cancer patients were typically in the post-treatment phase and reported good baseline quality of life, which left little room for positive changes during the intervention period (e.g., Rosenberg et al. 2002; Zakowski et al. 2004). Second, this study examined indices of existential wellbeing (i.e., a sense of meaning and peace and demoralization), which are theoretically linked to emotional processing and expression and particularly relevant for patients with life limiting illness (Schwartz & David, 2002).'
Design	Randomised controlled trial. Computerized random assignment to the expressive writing or neutral writing group then occurred using the method of random permuted block.
Sample (patient group) and recruitment method	87 women with metastatic breast cancer and significant psychological distress. Women with Stage IV breast cancer were recruited from a comprehensive cancer center in New York City from March 2008 to November 2009.
Sample size	87 (44 in expressive writing group, 42 in neutral writing group.
Inclusion/exclusion criteria	'Inclusion requirements were (1) English fluency, (2) at least 18 years of age, and (3) significant distress as indicated by scores exceeding the cutoff (≥ 4) on the Distress Thermometer (Jacobsen et al. 2005). Patients were excluded from study participation if they: (1) had severe cognitive impairment assessed with the Short Portable Mental Status Questionnaire (Pfeiffer, 1975), or (2) engaged in expressive writing on a daily basis.'
Ethnicity	'Patients were stratified by ethnicity (Caucasian vs. African American vs. other ethnicity) and age (<55 vs. 55–65 vs. >65 years). In the expressive writing group 81.8% were Caucasian, 4.5% African American, 4.5% Hispanic, 9.1% other. In the neutral writing group 81% were Caucasian, 9.5% African American, 7.1% Hispanic, 2.4% other.'
Age range	Expressive writing group – 57.4 mean, 12.5 SD. Neutral writing – 58.5 mean, 11.7 SD.
Stage of cancer	Stage IV breast cancer
Type of cancer treatment	Not reported
EWI description	'Patients completed four writing sessions over 4–7 weeks. For Session 1, a post-doctoral psychology research fellow called the patient and provided a brief introduction to the writing task. Patients were asked to go to a quiet area of their house where they would not be interrupted. Expressive writing participants were instructed to write their deepest thoughts and feelings about their cancer, whereas neutral writing participants described yesterday's activities in a factual manner.'
Follow-up period	'Patients completed a follow-up phone interview approximately 8 weeks after the final writing session. Interviewers were blinded to participants' group assignment.'
Measures used	The Meaning/Peace subscale of the Functional Assessment of Chronic Illness Therapy—Spiritual Well-Being scale. The Distress Thermometer (DT; Roth et al. 1998) Center for Epidemiologic Studies—Depression scale (CES-D; Radloff, 1977) Patients also completed the anxiety subscale of the Hospital Anxiety and Depression Scale (HADS-A; Zigmond & Snaith, 1983). The Pittsburgh Sleep Quality Index (PSQI; Buysse, Reynolds, Monk, Berman, & Kupfer, 1989).The Functional Assessment of Chronic Illness Therapy Fatigue subscale (FACIT-F; Yellen, Cella, Webster, Blendowski, & Kaplan, 1997). Trained interviewers administered the Australia-modified Karnofsky Performance Status Scale (AKPS; Abernethy, Shelby-James, Fazekas, Woods, & Currow, 2005) to assess baseline functional impairment.

Data analysis	‘Multivariate analyses of covariance (MANCOVA) were used to examine the effects of group assignment on follow-up outcomes, controlling for baseline values of the dependent variables. The following conceptually-related groups of dependent variables were analyzed in three separate MANCOVAs: (1) existential well-being (meaning/peace and demoralization); (2) psychological well-being (general distress, depressive symptoms, and anxiety); and (3) physical well-being (sleep and fatigue). Additional MANCOVAs were conducted to examine whether the effects of group assignment on the three sets of dependent variables differed according to functional status, time since diagnosis, and level of education (0 = less than a college degree, 1 = college degree or higher). Each potential moderator was independently analyzed and baseline values of the dependent variables were included as covariates. Finally, a logistic regression analysis was conducted to examine the effect of group assignment on the use of mental health services during the study, controlling for baseline use.’
Findings	‘Three MANCOVA analyses revealed no effects of writing group on the following sets of dependent variables with baseline values as covariates: (1) existential well-being (meaning/ peace and demoralization); (2) psychological well-being (general distress, depressive symptoms, and anxiety); and (3) physical well-being (sleep and fatigue) (see Table 2). To further examine the effects of writing group, mean change scores were calculated (data not shown). These scores revealed little change in study outcomes from baseline to follow-up for both writing groups.’
Manipulation checks	‘An independent rater unaware of writing group assignment read the transcribed essays in random order and judged the writing instructions for each essay. In addition, after each writing session, participants rated how personal their essays were and how much they revealed emotions in their essays on 7-point scales (1 = not at all; 7 = a great deal/extremely) (Stanton et al. 2002). The computerized text analysis program, Linguistic Inquiry and Word Count (LIWC; Pennebaker, Mayne, & Francis, 1997) provided the percentage of positive emotion words and negative emotion words in each essay, which served as a third manipulation check.’
Moderators	None.
Conclusions	‘First, the 100% retention rate across the four writing sessions supports the feasibility of home-based interventions for advanced cancer patients. Second, the findings provide a reliable estimate of health effects of expressive writing in this population due to the low attrition rate and rigorous methods (e.g., randomization, blind assessments, distress criterion for study entry). Third, results suggest that expressive writing may improve uptake of psychological support services among distressed patients without increasing symptom severity. Reducing personal barriers to psychological support seeking among those with clinically elevated distress is an important goal of health care.’
Identified limitations	‘Limitations of this trial should be noted. First, patients who were younger and more proximal to diagnosis were more likely to participate; however, these response biases were relatively small in magnitude. Second, the generalizability of the findings to men and patients with diverse ethnic and socioeconomic backgrounds warrants examination. In addition, although the sample size was more than double that of most expressive writing trials with cancer patients, we had limited power to detect small effect sizes. Finally, this study relied on self-reported outcome measures that were administered at one follow-up assessment. Administering objective and self-reported health assessments over time would provide a more comprehensive evaluation of expressive writing's health effects. A longer follow-up period may have revealed benefits of expressive writing when combined with mental health interventions. An intervention that involves social support and greater emotional processing of the stressor may be necessary for distressed patients with serious illness.’
Future research	‘Next steps include documenting further social outcomes of expressive writing and testing whether it is a useful adjunct to standardized psychosocial interventions.’

Title	**Effects of an expressive writing intervention on cancer-related distress in Danish breast cancer survivors — results from a nationwide randomized clinical trial**
Authors	M. B. Jensen-Johansen, S. Christensen, H. Valdimarsdottir, S. Zakowski6, A. B. Jensen, D. H. Bovbjerg and R. Zachariae
Year	2012
Journal	Psycho-Oncology
Country of origin	USA
Aims	'To examine the effects of an expressive writing intervention (EWI) on cancer-related distress, depressive symptoms, and mood in women treated for early stage breast cancer.'
Design	The women were randomised to the EWI group (n = 253) or control group (n=254).
Sample (patient group)	507 women treated surgically within 3 weeks of their diagnosis for invasive breast cancer stage I and II between March and September 2006.
Sample size	507
Inclusion/exclusion criteria	Eligible participants were female Danish residents, able to read and write Danish, aged 18-70 years, and treated surgically within 3 weeks of their diagnosis for invasive breast cancer stage I and II between March and September 2006.
Ethnicity	Not stated.
Age range	27-70.
Treatment type	Surgery
Stage of cancer	Breast cancer stage I and II
EWI description	Both groups were instructed to write for 20 min, once a week, over a 3 week period. The home based intervention followed previously used procedures (Zakowski et al. 2004). Following the procedure described by Pennebaker and Beall (1986), we asked EWI participants to write about a traumatic or distressing event and to explore their deepest feelings and emotions associated with this experience. They were free to write about their breast cancer as well as non-cancer experiences and to switch topics during the intervention.
Follow-up period	Baseline, 3 and 9 months post intervention.
Measures used	Impact of Events Scale (IES) Beck Depression Inventory (BDI) Profile of Mood States (POMS) A Passive Positive Mood Scale (PPMS) The Social Constraints Scale (SCS-C) Toronto Alexithymia Scale (TAS-20)
Data analysis	'Repeated-measures analyses of variance and covariance (RM ANOVAs, RM ANCOVAs) were used to compare mean distress scores at the three time points. Effects were calculated for time and for time_group interactions, the latter reflecting significant differences between EWI and CTRL over time. Variables were inspected for outliers and log-transformed (Ln) as needed [36]. Possible moderator effects suggested in the literature were explored as recommended [37] with linear regressions entering the interaction terms. The influence of writing topic was explored by repeating the aforementioned RM ANOVAs combined with planned comparisons (simple contrast) between the CTRL group and each of the two writing topic groups (own cancer and other topics). A nationwide cohort of 3343 Danish women treated for primary breast cancer [25,34] was used as a non-writing reference group.'

Findings	‘Most EWI participants (n = 108) reported to have written about their breast cancer in at least one of the three sessions. The remaining women (n = 85) wrote about other personal traumas in all three sessions. Women who had received mastectomy, had received chemotherapy, or had used pain medication and professional help were more likely to write about having breast cancer than other traumas (chi2 tests; p = 0.012–0.026). No other group differences were found at baseline (data not shown). Repeated-measures analyses of variance revealed statistically significant reductions in cancer-related distress (IES), depressive symptoms (BDI-SF), and negative mood (POMS) (F: 6.43–21.26; p<0.001). No effects of time were found for positive mood (PPMS, POMS Vigor). The effect sizes were medium to high with hp 2 rangingbetween 0.03 and 0.09 (_d between 0.36 and 0.64). When including age and baseline levels of BDI-SF as covariates, no effects of time reached statistical significance. No time_group interactions reached statistical significance in any of the analyses, with or without covariates entered into the model. Effect sizes for time_group interactions were small, with hp 2 ranging between 0.001 and 0.012 (d<0.20) (A complete table of RM ANOVA statistics, adjusted effect sizes (hp 2), and effect sizes based on unadjusted change scores can be obtained from the authors by request).’
Manipulation checks	‘Compared with CTRL, the EWI group showed significant changes in the expected directions in negative [Wilks’ lambda (l) = 0.79, F(5, 442) = 24, p<0.001] and positive mood [l = 0.85, F(5, 442) = 15.7, p<0.001] immediately after the writing sessions (RM ANOVAs) (data not shown). The effect sizes were large [multivariate partial eta squared (hp 2): 0.15 to 0.21_Cohen’s d: 0.84–1.04].’
Moderators	‘No statistically significant moderation effects of social constraints (SCS-C) were found in any of the analyses, with or without covariates in the model (data not shown). Scores on the TAS-20 EOT subscale moderated the effect of EWI on IES-total scores at three months (beta: 0.26, p = 0.021), with lower EOT scores in the EWI group (but not CTRL) being associated with greater reductions in IES scores from baseline to three months. TAS-DDF moderated changes in positive mood (PPMS) from baseline to three months (beta: _0.24, p = 0.049), with higher scores on TAS-DDF being associated with increase in PPMS in the CTRL group, but not in EWI group. No other moderation effects were found for TAS-20 total and subscale scores (data not shown).Repeated-measures analyses of variance with Writing Topic Group as the independent variable revealed a significant interaction (time_Topic-Group) for the IESavoidance subscale [effect size (hp 2): 0.05_Cohen’s d: 0.46], suggesting greater reductions over time in IESavoidance when writing about other topics than about one’s own cancer. However, none of the contrast analyses revealed significant differences when comparing either of the two writing subgroups to controls (SPSS, K-matrix). No further interaction effects (time_Topic-Group) reached statistical significance, when including all three time points in the model.’
Conclusions	‘The results of this large, randomized controlled trial with a nationwide sample of women treated for breast cancer did not confirm our hypothesis that EWI participants would experience greater reductions in distress when compared with an active control group.’
Identified limitations	‘While our randomized clinical trial has several strengths, including a large, population-based sample providing the ability to adjust for a number of potential confounders, a number of limitations could have influenced the results. First, 44% of the eligible women actively refused or failed to respond to the invitation to participate. Another issue could be the slightly longer duration of telephone calls in the EWI group due to more spontaneous talk initiated by the participants during debriefing, and we cannot rule out this debriefing as a confounder. Finally, there are several issues concerning writing topic. One concern could be that we distinguished between women who wrote about their own cancer experience in any one of three sessions and women who wrote about another traumatic experience in all three sessions. The variation in writing dose, however, did not influence the results. Second, writing topic was categorized according to self-report, rather than an in-depth qualitative analysis of all essays. While the inter-rater reliability between an independent rater and self-reported writing topics appeared acceptable for a subsample of essays, it is unknown

	whether the writing topic effects would hold up, if writing topics had been determined independently. Third, we do not know the reasons for choosing not to write about cancer. The reason could be that for some women, the cancer was no longer stressful, while for others the cancer was experienced as too stressful to write about. Including a measure of perceived or observer-rated stressfulness of their cancer diagnosis and treatment could have been relevant. A fourth potential confounder could be the recency of the non-cancer trauma. While we assume to be comp aring cancer with non-cancer writings, we could in fact be comparing the recency of the trauma. Although self-selected writing topic may increase external validity, lack of randomization may limit the generalizability of differences found between writing topic groups. Finally, while we considered a three-arm trial with a third group randomized to a group restricted to write about their cancer, this was abandoned because due to statistical power considerations.'
Future research	'These limitations should be considered in future EWI studies with cancer patients.'

Title	**Who benefits from emotional expression? An examination of personality differences among gynaecological cancer patients participating in a randomised controlled emotional disclosure intervention trial.**
Authors	Zakowski
Year	2011
Journal	British Journal of Psychology
Country of origin	Chicago, USA
Aims	Examined the role of neuroticism and extraversion in the effects of written emotional disclosure in patients diagnosed with gynaecological cancer.
Design	Participants were randomised to EWI (N = 43) or NW (n = 45).
Sample (patient group)	'Women who had been diagnosed with gynaecological cancer were recruited through clinics in the metropolitan areas of Milwaukee, Wisconsin and Reno, Nevada between 1998 and 2003 for a longitudinal study examining the psychosocial effects of emotional disclosure.'
Sample size	Final sample consisted of 88 patients who completed all assessments necessary.
Inclusion/exclusion criteria	'Eligibility requirements included a first time diagnoses if gynaecological cancer, completion of active cancer treatment, no evidence of psychiatric problems or any current life-threatening disease other than cancer, and ability to fluently read and write in English.'
Ethnicity	97.70% were Caucasian, 70.5% currently married, 48.3% currently employed, and 33.3% had at least a college education.
Age range	Patients were between 24 and 84 years old (m = 57.92, SD = 12.85).
Treatment type	98.9% had undergone surgery.
Stage of cancer	Types of cancer included uterine (25%), ovarian (48.9%), cerival (11.4%) and other (9%), and 5.7% had more than one type of cancer.Cancer staging information revealed that 30.7% had Stage I, 12.5% stage II, 28.4% stage III, and 6.8% stage IV disease at diagnosis.
EWI description	'Details of the procedures are described elsewhere (Zakowski et al. 2004). Briefly, participants completed informed consent, a baseline assessment, 3 days of writing including brief questionnaires, a 1 week and 6 month follow up assessment.'
Follow-up period	Baseline, 1 week and 6 months post intervention.
Measures used	NEO five factor inventory Brief Symptoms Inventory Impact of Events Scale

	Profile of Mood States
Data analysis	'Hierarchical multiple regression analysis entering Baseline Distress, Neuroticism, Extraversion, Condition in step 1, and the Condition by Neuroticism and Condition by Extraversion cross products in step 2 showed a significant Condition×Neuroticism interaction $F(1,83) = 8.47$, $p < .01$ on distress at follow-up but no significant Condition by Extraversion interaction.'
Findings	'As reported previously, there was no significant main effect of writing condition (Zakowski *et al.* 2004). There was also no significant main effect for Neuroticism but a trend towards significance for Extraversion suggesting a negative relation with distress at follow-up (see Table 4). Regression lines plotted in accordance with recommendations by Aiken and West (1991) revealed that experimental group participants low on N exhibited reduced distress 6 months after writing about their cancer while participants high on N exhibited heightened levels of distress. Participants in the control condition reported medium distress levels irrespective of level of N (see Figure 1). This was confirmed when examining simple slopes (Aiken & West, 1991) which revealed a significant regression of distress on neuroticism in the experimental condition, $t = 3.10$, $p = .004$, _ = 0.32 but no significant effect in the controls, $t = -1.69$, $p = .10$, _ = −0.19.'
Manipulation checks	'A manipulation check was included in order to verify the effectiveness of and subjects' compliance with the writing instructions. At the end of each writing session subjects rated how personal the essay was and to what extent they revealed their emotions in the essay. Total scores were examined collapsing across the three writing sessions revealing a significant condition effect on both sets of ratings, $F(1,84) = 23.48$, $p < .001$, and $F(1,84) = 33.42$, $p < .001$, respectively, suggesting that the manipulation was effective. Zero-order correlations revealed a significant moderate correlation between N and E ($r = -.45$), significant negative correlations of GSI with E and positive correlations with N (see Table 3).'
Moderators	'Testing the hypothesis that high N individuals would report more negative mood after emotional disclosure, we conducted a multiple regression analysis with change in negative mood from pre- to post-writing across the three writing days as the dependent variable. In addition to a significant Condition main effect, $F(2,84) = 5.10$, $p < .03$ there was a significant N×Condition interaction, $F(3,84) = 5.02$, $p < .03$ (see Table 4). **Table 4.** Regression plot revealed that high N participants exhibited the greatest increases in negative mood after writing about their cancer experience (see Figure 2). Simple slope analysis, however, revealed non-significant relationships between Neuroticism and negative mood change for the experimental group, $t = 1.63$, $p = .11$, _ = 0.25 as well as the control group, $t = -1.62$, $p = .11$, _ = −0.25. Next, we conducted similar multiple regression analysis to examine whether high N individuals would use more avoidant coping during the week following emotional disclosure. Again there was a significant relationship between baseline avoidance and avoidance post-writing, $F(1,86) = 30.25$, $p < .001$ and a significant N×Condition interaction, $F(4,87) = 11.42$, $p = .001$ (see Table 4). Regression plot revealed that results were in the expected direction with participants high on N reporting the highest levels of avoidance of cancer-related reminders (see Figure 3). Simple slope analysis revealed a significant positive relation between N and avoidance in the experimental condition, $t = 3.36$, $p = .002$, _ = 0.39 and a non-significant effect in Controls, $t = -.78$, $p = .544$, _ = −0.10.'
Conclusions	'Patients high in Neuroticism did not appear to benefit from the intervention and in fact exhibited higher levels of distress at 6-month follow-up compared to those lower in neuroticism who reported lower post-writing distress. Extraversion however did not moderate the effect. Several mechanisms were proposed for the moderating role of these personality traits. With respect to neuroticism, we surmised that those high on this trait would view emotional disclosure as distressing and thus have higher negative mood after each writing session. Further, as a result of being confronted with a trait-incongruent and

	thus a potentially aversive experience, these patients were expected to respond with greater avoidance of cancer-related thoughts and stimuli 1 week after disclosure. Indeed, patients scoring higher on neuroticism reported a greater increase in negative moods in response to the expressive writing sessions (though simple slopes did not reveal this effect to be significant) as well as greater avoidance 1 week later, however, neither of these variables significantly accounted for the moderating effect of neuroticism.'
Identified limitations	'Due to the relatively low number of participants, we were not able to examine the three-way interaction of N by E by Condition. It is possible that the combination of varying levels of the two traits would yield further information of how these traits combine to effect outcomes after emotional disclosure about a life stressor. This should be examined in future studies. Further, our study included a very specific population of gynecological cancer patients which limits external validity of the findings. Previous studies, like our own, have not yielded significant main effects of emotional disclosure on psychological outcomes in cancer patients. Our data suggest that this may be explained by individual differences in responses to such interventions. Others have suggested other possible moderators of the effect such as alexithymia, coping style, and social constraints (e.g., Baikie, 2008; Kraft, Lumley, & D'Souza, 2008; Lumley, Tojek, & Macklem, 2002; Zakowski *et al.* 2004). Finally, we were unable to identify possible reasons for the moderating effects of neuroticism. While theoretical models point to mood and avoidance as mediators, this link did not bear out in our study. Thus, it is to date unclear why high N individuals displayed greater distress in response to the intervention. Assuming that this effect will be replicated in future studies, it will be interesting to examine other possible mediators.'
Future research	'It is possible that the combination of varying levels of the two traits would yield further information of how these traits combine to effect outcomes after emotional disclosure about a life stressor. This should be examined in future studies.'

Title	**Narrowing the gap: the effects of an expressive writing intervention on perceptions of actual and ideal emotional support in women who have completed treatment for early stage breast cancer.**
Authors	Grace Gellaitry, Keri Peters, David Bloomfield and Rob Horne
Year	2010
Journal	Psycho-Oncology
Country of origin	USA
Aims	To assess the effects of an expressive writing (EW) intervention on perceptions of emotional support in women completing treatment for early stage breast cancer.
Design	RCT, participants randomised to expressive writing or usual care.
Sample (patient group)	Women with breast cancer.
Sample size	93 were randomised. 45 in EWI group, 48 in control group.
Inclusion/exclusion criteria	Patients were excluded from the study if: (1) they were unable to write for the duration of 20 min; (2) they were unable to speak, read or write English or (3) they had a defined psychiatric disorder.
Ethnicity	Not reported.
Age range	EWI group 58.4 (10.8) control group 57.5 (9.1)

Treatment type	Women were recruited to the study during their final week of treatment.
Stage of cancer	Participants had been diagnosed with stage I and II breast cancer within the previous 12 months.
EWI description	'Participants were asked to write, at home, for a period of 20 minutes on four consecutive days, to write continuously for the specified duration of the task, without focusing unduly on grammar or spelling. Participants were advised to write at roughly the same time each day. The confidentiality and anonymity of the written material were emphasised. As we specifically wanted women to explore their experience of breast cancer, we adapted the writing instructions to guide women's writing over the 4 days. Based on previous research [27, 28], we anticipated that providing writing guidelines would result in similar benefits to the standard classic writing instructions [1]. Although participants were given writing guidelines for each of the 4 days, it was emphasised that it was crucial that participants should write about what was important to them. The guidelines for each day had the following focus: **Day 1:** Emotional disclosure—exploring deepest thoughts and feelings about your experience of breast cancer. **Day 2:** Cognitive appraisal—making sense of your illness. What does having breast cancer mean to you? **Day 3:** Benefit finding—perceived benefits of your experience; challenges you have overcome; changed outlook on life/priorities? **Day 4:** Looking to the future—coping strategies; sharing experience with others. The researcher was not present during the completion of the writing tasks but telephoned participants on the final day to address any outstanding questions and/or concerns and to explore briefly participants' immediate response to the writing task. Participants who reported distress following writing could be referred, with their permission, to a Macmillan Nurse Counsellor. Control groups in EW studies are typically instructed to write about unemotional neutral topics, often descriptions of daily events. Previous research has indicated that for some clinical groups the typical control condition may not in fact be completely neutral and engender distress in participants [29]. In order to avoid this, we did not ask the control group to engage in any type of writing task.'
Follow-up period	baseline, 1 month, three months and 6 months.
Measures used	The Significant Others Scale Quality of life (QOL) was assessed using the Functional Assessment of Cancer Therapy—Breast Profile of Mood States Questions on healthcare utilisation
Data analysis	'Between group comparisons at baseline were made using independent samples t-tests for continuous variables and chi-square tests for categorical data. Repeated measures ANOVA were used to compare the intervention group with control group on measures of social support, QOL, negative affect and healthcare utilisation. Subsequent analyses involved ANCOVA for mixed designs with between subjects variables of condition (intervention or control) and within subjects variable of time of follow-up (1, 3 or 6 months) with baseline scores as the covariate. Partial correlations, controlling for baseline measures, were used to examine linear relationships between variables at 6 months post intervention.'
Findings	'Eighty participants completed all follow-ups. There was a significant effect of group on women's perceptions of social support with those in the intervention group being more satisfied with the emotional support they received (po0.05). Satisfaction with emotional support was negatively correlated with depression/dejection (po0.05) and anger/hostility (po0.05) and positively correlated with social and family well-being (po0.001) 6 months post intervention.There were no significant effects of the intervention on mood, QOL or healthcare utilisation. Most participants found writing valuable and did not report any long-term negative effects. In interviews carried out 6 months after writing, several of the women indicated that writing gave them the opportunity to disclose feelings they found difficult to share with those closest to them because they did not want to cause them more worry. The effect of breast cancer on family members has previously been found to be one of the most important concerns of

	women diagnosed with the disease [33]. Whether disclosing their deepest thoughts and emotions in their writing enabled women to be more open with others, or whether writing allowed them to gain a different perspective on things, thus changing how they interacted with others, is something that warrants further investigation.'
Manipulation checks	None.
Moderators	None.
Conclusions	'The results of this study revealed significant effects of an EW intervention on perceptions of social support in a cohort of women who had recently completed treatment for early stage breast cancer. Women who wrote about their experience of having breast cancer were more satisfied with the emotional support that they were receiving from significant people in their lives than those in the control group. More specifically, the support they reported receiving was more closely 'matched' to the support they would ideally like to have than those in the control group. In the sample as a whole, satisfaction with perceived emotional support was related to lower rates of depression/ dejection and anger/hostility and higher reported levels of social and family well-being 6 months post writing.'
Identified limitations	'There are some limitations to the study. The sample did not demonstrate cultural or ethnic diversity thus potentially limiting the extent to which these findings can be generalised. Furthermore, the sample consisted of women with early stage breast cancer and therefore no assumption can be made about the suitability of the writing paradigm to women with more advanced disease. Additionally, no provision was made to offer participants an alternative means of disclosure, such as the use of audiotapes, thus excluding women who are unable to write for whatever reason.'
Future research	'The challenge is to identify the groups of people most likely to benefit from EW, the most effective methods of delivering the intervention and the protocol used.'

Title	**A Randomized Controlled Trial of Emotionally Expressive Writing for Women With Metastatic Breast Cancer**
Authors	Carissa A. Low, Annette L. Stanton, Julienne E. Bower, Lauren Gyllenhammer
Year	2010
Journal	Health Psychology
Country of origin	USA
Aims	'To test the effects of emotionally expressive writing in a randomized controlled trial of metastatic breast cancer patients and to determine whether effects of the intervention varied as a function of perceived social support or time since metastatic diagnosis.'
Design	'Women (N = 62) living with Stage IV breast cancer were randomly assigned to write about cancer-related emotions (EMO; n = 31) or the facts of their diagnosis and treatment (CTL; n = 31). Participants wrote at home for four 20-min sessions within a 3-week interval. The randomization schedule was created by a biostatistician using a computerized random numbers generator. Sequentially numbered envelopes were used to conceal allocation. Instructions for the experimental conditions were adapted from Pennebaker and Beall (1986) and Stanton et al. (2002) and are available from the authors upon request.'
Sample (patient group)	62 women living with Stage IV breast cancer. 'On average, women had first been diagnosed with breast cancer 7.9 years ago (SD = 67 months) and had been living with their Stage IV diagnosis for 3.3 years (SD = 28.1 months). Most women had bone metastases (69%; 16% lung metastases, 44% liver metastases, 10% brain metastases).'
Sample size	62

Inclusion/exclusion criteria	Not reported
Ethnicity	White (87%)
Age range	'Across the entire sample, the average age was 53.8 years (SD = 10.3, range = 29 to 78). Most women were college educated (74%), married or living as married (71%), and not working outside the home (78%). '
Treatment type	'In addition, most participants had at least some experience with cancer support groups (72%), talking with a mental health professional about cancer (63%), or journaling about the cancer experience (63%).'
Stage of cancer	IV
EWI description	'Instructions for the experimental conditions were adapted from Pennebaker and Beall (1986) and Stanton et al. (2002) and are available from the authors upon request. After women received materials for the writing exercises, they called the research office to schedule four 20-min sessions within a 3-week interval at their convenience. Following a procedure used in previous expressive writing research with cancer patients and loved ones (e.g., Bishop, Lee, Stanton, & Wingard, 2004; Zakowski et al. 2004), a trained research assistant telephoned women at the beginning of each session to read the instructions to the participant, then called again 20 min later to ask women to stop writing. Condition assignment was revealed to the assistant reading instructions during the first writing session. After each writing session, women mailed their essays to the research office.'
Follow-up period	three months
Measures used	'The Center for Epidemiologic Studies– Depression Scale (CES–D; Radloff, 1977) contains 20 items that assess the frequency of depressive symptoms in the past week. The 7-item Intrusions subscale of the Impact of Events Scale (IES; Horowitz, Wilner, & Alvarez, 1977) was administered to assess how distressing cancer-related intrusive thoughts (e.g., "I thought about it when I didn't mean to.") had been over the past week. Negative somatic symptoms were assessed using a measure developed by Pennebaker (1982), which has been shown to be responsive to the expressive writing intervention (Stanton et al. 2002). This scale asks participants to report the number of days in the past month on which they experienced each of nine somatic symptoms (e.g., headache, stomach ache, chest pain, runny/congested nose, faintness/ dizziness, shortness of breath, racing heart, stiff/sore muscles, coughing/sore throat). The Pittsburgh Sleep Quality Index (PSQI; Buysse et al. 1989) assesses sleep quality over the past month and yields a total sleep disturbance scale, with scores of 5 or above on the PSQI indicative of clinically significant sleep disruptions (Buysse et al. 1989).'
Data analysis	'Primary analyses were ANCOVAs, entering baseline value of the relevant dependent variable as a continuous independent variable (to control for nonsignificant chance variation between groups at baseline) and experimental condition as a categorical independent variable. In addition to main effect analyses, analyses were also conducted to determine whether intervention effects vary as a function of social support or time since metastatic diagnosis. Linear regression analyses were used to examine moderators, in which potential moderators were centered and included as continuous independent variables, along with baseline values of dependent variables, dummy-coded experimental condition (CTL = 0 and EMO = 1), and the condition × moderator interaction term. Significant condition × moderator interactions were interpreted following the recommendations of Aiken and West (1991); specifically, separate regression equations were calculated for high (1 SD) and low (−1 SD) levels of the moderator and the significance of the slopes of each regression line examined to determine whether the value of the simple slope differed from zero.'

Findings	'No significant main effects of experimental condition were observed. A significant condition × social support interaction emerged on intrusive thoughts; EMO writing was associated with reduced intrusive thoughts for women reporting low emotional support (η2 = .15). Significant condition × time since metastatic diagnosis interactions were also observed for somatic symptoms and sleep disturbances. Relative to CTL, EMO participants who were more recently diagnosed had fewer somatic symptoms (η2 = .10), whereas EMO participants with longer diagnosis duration exhibited increases in sleep disturbances (η2 = .09).'
Manipulation checks	'An independent rater unaware of condition assignment read all transcribed essays in random order and recorded which condition instructions they most reflected. The rater correctly classified 94% of the essays, indicating excellent adherence to writing instructions. At three months, participants rated the extent to which they had thought about what they wrote, talked to others about what they wrote, felt the research project had positive or negative long-lasting effects, and how much the project increased their understanding of their experience from 1 (not at all) to 7 (extremely). In contrast to previous trials, in which participants completed essay ratings immediately after each writing session (Stanton et al. 2002; Zakowski et al. 2004), independent t tests revealed no significant group differences in these ratings at follow-up (ps > .20), although mean ratings for "thought about what you wrote about" and "increased your understanding of your experience" were somewhat higher in the EMO than the CTL condition (3.35 vs. 2.74 and 3.29 vs. 2.84, respectively).'
Moderators	'We also examined perceived emotional support as a moderator of intervention effects. This hypothesis was guided by social constraint theory, which suggests that the absence of social outlets for emotional expression and processing has a negative effect on adjustment to stressful situations. As hypothesized, women reporting low emotional support benefited from the opportunity to express and process cancer-related emotions, which was reflected in decreased intrusive thoughts at three months. These results are consistent with an earlier writing trial with cancer patients, and suggest that expressive writing may represent a useful intervention for individuals who lack opportunities for emotional expression in their social environments (Zakowski et al. 2004).'
Conclusions	'Although there was no main effect of expressive writing on health among the current metastatic breast cancer sample, expressive writing may be beneficial for a subset of metastatic patients (including women with low levels of emotional support or who have been recently diagnosed) and contraindicated for others (i.e., those who have been living with the diagnosis for years).'
Identified limitations	'Although the sample of 31 women per condition at follow-up is larger than as those in previous expressive writing trials reporting main effects (de Moor et al. 2002; Stanton et al. 2002), our study may have been underpowered to detect main effects, particularly for psychological outcomes, as well as moderated effects.'
Future research	'Future research should examine biological markers that might be clinically relevant for MBC patients. Larger sample sizes also needed. Future research may also benefit from exploration of alternative writing topics, such as the perceived benefits of the cancer experience (Stanton et al. 2002) or a noncancer related control topic.'

Title	**Emotional Disclosure Through Patient Narrative May Improve Pain and Wellbeing: Results of a Randomised Controlled Trial in Patients with Cancer Pain.**
Authors	Cepeda
Year	2008
Journal	Journal of Pain and Symptom Management
Country of origin	USA

Aims	‘To determine whether incorporating a structured narrative approach (writing about how the illness has affected the dimensions of life) in patients with advanced cancer decreases pain intensity and improves patients global assessment of their wellbeing.’
Design	234 patients were randomised into 3 groups: 1.) narrative (n = 79), in which patients wrote a story about how cancer affected their lives for at least 20 minutes once a week for three weeks; 2.) questionnaire (n = 77), in which patients filled out the McGill Pain Questionnaire, this was included as an attentional control.; and 3.) control (n = 78), in which patients came weekly to medical visits during which they received usual customary care.
Sample (patient group)	Recruited patients from the oncology, radiotherapy, and pain management services of the Javeriana University Oncology Centre and the Colombian National Institute of Cancer.
Sample size	230 people were randomised.
Inclusion/exclusion criteria	‘To facilitate the generalisability of the results, the sample included adult patients with any type of cancer who reported average pain intensity levels of at least 5/10 on a 0-10 scale, were able to read and write, and scored 50% or higher on the Karnofsky scale.’
Ethnicity	Not reported even though they say ethnicity is important with regards to narrative approaches in the discussion.
Age range	Narrative group mean = 50.2 Questionnaire group mean = 49.1 Control group mean = 46.2
Treatment type	Any.
Stage of cancer	Various.
EWI description	‘We asked them to write about how cancer had affected their lives, calling upon their deepest thoughts, feelings and fears if present, and to do so about once a week for at least 20 minutes. We asked them not to disclose any form of identification within the narrative, nor to concern themselves with polishing their grammar, spelling or style. Specific instructions not included in this article.’
Follow-up period	‘Patients participated for eight weeks following randomisation. All patients were seen weekly for the first three weeks in the pain clinic or palliative care service, then called weekly for four more weeks, and then asked to come to the last session of this intervention at the eighth week.’
Measures used	Patients rated their average pain intensity during the prior week using a verbal numerical rating scale in which 0 is no pain and 10 is the worst imaginable. As a secondary outcome, we evaluated each patient’s sense of general wellbeing on a seven point Likert scale that ranged from ‘awful’ to ‘excellent’.
Data analysis	‘An analysis of repeated measures using generalised estimating equations (GEE). The GEE method adjusts standard errors because the multiple observations on the same subject are not independent. To analyse the effect of the treatment on patients sensation of wellbeing, we used a similar approach as described for pain intensity, despite assessing wellbeing with a Likert scale.’
Findings	‘Twenty patients had no emotional disclosure in one or more of the three written essays; in five patients, the emotional disclosure in at least one of the narratives was rated “very much.” These latter patients had significantly lower pain intensity than patients whose emotional disclosure in their narratives was never rated as great as “very much” (Fig. 3). The average difference in pain intensity between these two latter groups was 2.5 units (95% CI _4.2, _0.9). At subsequent follow up, patients whose narrative emotional disclosure rated highest also had higher well-being scores than patients whose narratives had lower emotional disclosure (1.37 difference, 95% CI 1, 1.7). These improved outcomes in patients with a high degree of emotional disclosure cannot be explained by lower levels of pain intensity or higher senses of well-being at the start of the study. Baseline pain intensity scores in the patients whose narratives had the highest emotional disclosure were 8.7 _ 2. , vs. 7.5 _ 1.8 in patients with lesser emotional disclosure. In terms of well-being, baseline

	scores were 3.8 _ 11 in the higher emotionally disclosing group and 3.75 _ 1.5 in individuals with less emotionally disclosing narratives. None of the other categorizations used to dichotomize the degree of emotional disclosure was associated with lower pain intensity levels or higher senses of well-being.'
Manipulation checks	'We assessed the emotional disclosure of the patients' narratives using a six-point Likert scale that ranged from ''none'' to ''very much.'' Similar assessments of the magnitude of emotional disclosure have been performed in previous studies.20,32. Nonetheless, because of the subjectivity in rendering this assessment, two raters graded the degree of emotional disclosure in the patients' narratives independently.'
Moderators	None.
Conclusions	'Overall pain intensity and sense of well-being were similar in all three groups, suggesting that writing a narrative does not alter those outcomes. Other clinical trials have failed to show that writing has therapeutic benefit and an update of a systematic review on the effect of emotional disclosure concluded that writing did not produce any clear improvement in physical health or other health outcomes.'
Identified limitations	'We cannot rule out the possibility that our findings are subject to the additional confounding effect of our not having randomized patients to disclose narrative material of a neutral or emotional nature but instead relied upon patients to self-allocate within these categories. Nonetheless, confirmation of the present results would be worthwhile because, if our results are generalizable, the benefit of writing emotionally disclosing narrative may be clinically important. The 2.5-unit decrease in pain intensity observed in our study is typically considered by patients to be clinically meaningful.33 Despite efforts to assure adherence, only 50% of patients had the desired ''exposure'' writing three narratives and 25% of patients provided no emotional disclosure in one or more of the narratives. Patients may have not invested the time necessary to develop emotional themes in their stories; we did not measure how much time patients dedicated to writing these. This lack of ''adherence'' could explain the absence of a clear effect of composing versus not composing narratives upon pain and well-being. These findings may also be interpreted as showing that patients with advanced cancer and significant disease burden find it difficult to compose emotional narratives. Although previous studies that included patients with cancer17,20 have found that such patients were able to construct emotionally disclosing stories, these trials included patients with early stage disease.'
Future research	'Cultural differences, including beliefs and values, can shape how patients experience pain, how they form and express their narratives, their willingness to disclose narrative information, and the impact of the narrative on quality of life. Therefore, such issues should be taken into consideration.'

Title	**Expressive writing as a presurgical stress management intervention for breast cancer patients.**
Authors	De Moor
Year	2008
Journal	Journal of the Society of Integrative Oncology
Country of origin	USA
Aims	This study evaluated whether expressive writing (EW) was an effective stress management intervention for breast cancer patients.
Design	Women were recruited at the end of neoadjuvant chemotherapy and assigned to write about their cancer experience (EW group; n = 24) or neutral topics (neutral writing [NW] group; n = 25).

Sample (patient group)	Women were recruited at the end of neoadjuvant chemotherapy
Sample size	EW group; n = 24) or neutral topics (neutral writing [NW] group; n = 25).
Inclusion/exclusion criteria	Inclusion criteria: Above 18 years of age, fluent in English, free from comorbidity, received over 2 months of neoadjuvant chemotherapy, and scored less than 30 on the Beck Depression Inventory.
Ethnicity	58% white (EW group), 67% white (NW group)
Age range	56 (EW) and 50 (NW)
Treatment type	Women were recruited at the end of neoadjuvant chemotherapy
Stage of cancer	46% stage 2 (EW) and 48% stage 2 (NW). 54% stage 3 (EW) and 52% stage 3 (NW).
EWI description	Women were asked to write for 20 minutes a day for a total of four writing sessions that were completed over a 7-day period.
Follow-up period	Participants were reassessed approximately 3 days before and 2 weeks after surgery.
Measures used	Brief Symptom Inventory (BSI-18), Perceived Stress Scale (PSS), Pittsburgh Sleep Quality Index (PSQI), Social Constraints Scale (SCS) and the Brief Pain Inventory (BPI), Impact of Events Scale (IES) and Emotional Approach Coping Scale (EACS).
Data analysis	‘A series of one-way analysis of variance tested whether the EW and NW groups differed in their word use. A general linear mixed model approach was conducted using the SAS system for Windows to test for group differences in the dependent variables and aspects of distress and sleep disturbance.’
Findings	‘The intervention did not significantly decrease women's distress, perceived stress, sleep disturbance, or pain. There was some evidence that the EW group used more sleep medication at the presurgical assessment than the NW group. Social constraints moderated the effect of the intervention. Among women with high social constraints, the EW group reported lower average daily pain than the NW group. Among women with low social constraints, the EW group reported higher average daily pain than the NW group. EW was not broadly effective as a stress management intervention for women with breast cancer. These data do not support the use of EW as a presurgical mind-body complementary medicine program for this population.’
Manipulation checks	None reported.
Moderators	Social constraints. Those with high levels of perceived social constraints reported lower average pain after surgery (t(1, 31) = 2.10, p = .05).
Conclusions	The authors do not recommend the use of EW as a complement to surgery for women with breast cancer.
Identified limitations	High drop out rate (48%), inconsistent compliance across the intervention groups, low power.
Future research	‘Additional research should assess whether changing the timing and the location of the intervention increases the effectiveness of writing for presurgical populations and determine whether writing is more effective on physical health outcomes of cancer patients.’

Title	Expressive Writing in Patients Receiving Palliative Care: A Feasibility Study
Authors	Eduardo Bruera, Jie Willey, Marlene Cohen, & Lynn Palmer

Year	2008
Journal	Journal of Palliative Medicine
Country of origin	USA
Aims	The purpose of this study was to determine the feasibility of expressive writing in patients receiving palliative care and the most suitable outcomes of expressive writing in this patient population.
Design	Patients were randomly assigned to either the expressive writing group (EWI) or the neutral writing group (NW). Anxiety level before and after the writing session was compared between the two groups.
Sample (patient group)	24 patients were enrolled. Advanced cancer receiving palliative care.
Sample size	24 but only 8% completed the two week study
Inclusion/exclusion criteria	Six patients not eligible for reasons such as high HADS score, treatment for depression and unable to write because of history of stroke.
Ethnicity	92% Caucasian
Age range	Median age was similar at 55.4 and 54.3 respectively.
Treatment type	Palliative care.
Stage of cancer	Palliative.
EWI description	EWI group instructed to write about deepest thoughts and feelings regarding cancer experience. Neutral writing group wrote about diet, physical activity, and sleep habits. Sessions were conducted twice weekly for two weeks, lasting 20 mins each.
Follow-up period	STAI completed before and after each session.
Measures used	Brief Symptom Inventory Hospital Anxiety and Depression Scale Perceived Stress Scale Edmonton Symptom Assessment (ESAS) Functional Assessment of Chronic Illness Therapy Fatigue (FACT-F) Pittsburgh Sleep Quality Index (PSQI)
Data analysis	Simply looked at median and range of STAI scores before and after writing sessions.
Findings	There were no differences in STAI scores after writing sessions. All participants scores remained in the ‘somewhat anxious’ range.
Manipulation checks	Little of what was written in the EWI group was considered emotional content according to Pennebaker (1996).
Moderators	None.
Conclusions	EWI is not feasible in palliative care populations due to participants becoming too ill.
Identified limitations	Small sample size to begin with, and high drop out rate in palliative care population.

Future research	Future research should address whether audio recorded statements or telephone interviews could be used as an alternative to writing for some patients.

Title	Does Self-Affirmation, Cognitive Processing, or Discovery of Meaning Explain Cancer-Related Health Benefits of Expressive Writing?
Authors	Creswell, J. D., Lam, S., Stanton, A., Taylor, S. E., Bower, J. E. & Sherman, D. K.
Year	2007
Journal	Society for Personality and Social Psychology
Country of origin	USA
Aims	‘The present study aimed to assess self-affirmation, cognitive processing, and discovery of meaning as potential mediators of the effects of expressive writing on physical health in early-stage breast cancer survivors.’
Design	Further analysed data from Stanton et al (2002).
Sample (patient group)	Sixty-three early-stage (Stage I and II) female breast cancer patients who were within 20 weeks after completing cancer treatment.
Sample size	63. Numbers in each experimental group not reported.
Inclusion/exclusion criteria	‘Participants were excluded from the study if they had a diagnosis of recurrent or metastatic disease or were unable to write in English. Three participants dropped out of the study due to a cancer recurrence (*n* = 2) or lack of interest (*n* = 1).’
Ethnicity	Caucasian (93%), African American (5%), and Asian American (2%).
Age range	Participants ranged in age from 21 to 76 years old (*M* = 49.5)
Treatment type	within 20 weeks after completing cancer treatment (e.g., chemotherapy, surgery, radiotherapy)
Stage of cancer	early-stage (Stage I and II) female breast cancer patients
EWI description	‘Participants were randomly assigned to one of three conditions and instructed to write about their (a) deepest thoughts and feelings regarding their experience with breast cancer (Emotional Expression), (b) positive thoughts and feelings regarding their experience with breast cancer (Benefit-Finding), or (c) facts regarding their cancer and its treatment (Fact-writing Control). For each writing session, participants were instructed to write continuously for 20 min. All procedures were IRB-approved. For a detailed description of the study, see Stanton et al. (2002).’
Follow-up period	‘At 1 and three months after completing the last writing assignment, participants completed questionnaires assessing their physical symptoms, cancer-related doctor visits, general life satisfaction (as measured by the Satisfaction With Life Scale [SWLS]; Diener, Emmons, Larsen, & Griffin, 1985), and mood throughout the past week (as measured by the Profile of Mood States [POMS]; McNair et al. 1971).”
Measures used	‘Heart rate was assessed continuously during the four writing sessions. Immediately before and after writing each essay, participants completed a measure of state distress using the state form of the Profile of Mood States (McNair, Lorr, & Droppelman, 1971). A state distress index was created by averaging the Anger, Depression, Tension, Fatigue, and Confusion subscales (α = .80-.88).’
Data analysis	‘The 240 essays (60 participants × 4 essays) were content analyzed by trained coders who were blind to the study hypotheses and the participants’ writing condition. Two groups of three judges coded the essays, with three judges coding for self-affirmation and three judges coding for cognitive processing and discovery of meaning. The judges were trained

	to code the essays for examples of self-affirmation or cognitive processing and discovery of meaning, with a sentence being the smallest unit of text that could be coded to a category. Judges coded statements as "text units," which was defined as a single sentence or multiple consecutive sentences describing a potential self-mediator. A series of multiple regression equations were conducted using an analytic approach specified by Baron and Kenny (1986).'
Findings	'Preliminary analyses revealed no significant experimental condition differences at baseline for stage of breast cancer (*p* = .70), time since diagnosis (*p* = .65), or physical symptoms (*p* = .15), suggesting that randomization was effective in equalizing the health status of the groups at baseline. The three writing conditions yielded writing in each potential self-mediator category across the four essays: self-affirmation statements (*M* = 8.98, *SD* = 8.53), cognitive processing statements (*M* = 5.32, *SD* = 5.50), and discovery of meaning statements (*M* =5.50, *SD* = 11.56). To assess the combined effects of cognitive processing and discovery of meaning on health, a pooled measure for cognitive processing and discovery of meaning was created by combining the composite measures of these two categories. The combined cognitive processing and discovery of meaning measure produced the highest frequency of coded statements across the potential self-mediator categories (*M* = 10.82, *SD* = 13.01).'
Manipulation checks	None.
Moderators	Life satisfaction and mood did not moderate outcomes of expressive writing.
Conclusions	'Contrary to study predictions, we did not find evidence that cognitive processing, discovery of meaning, or their combination mediated the association between expressive writing and physical health. The present study reveals that self-affirmation may act as a psychological mechanism for the benefits of expressive writing on aspects of health in early-stage breast cancer survivors. Using a content analysis methodological approach, the present findings show that self-affirmation writing was related to fewer physical symptoms at 3-month follow-up. Moreover, self-affirmation writing fully mediated the relationships between emotional expression and benefit finding writing on physical symptoms at 3-month follow up. Consistent with predictions, self-affirmation writing fully mediated the relationship of both experimental writing conditions on reductions in physical symptoms at 3-month follow-up. A first plausible mechanism is that self-affirmation writing may have increased self-esteem and self-efficacy for coping with cancer. A second plausible, and in our judgment more likely, explanation is that self-affirmations buffered the stress associated with writing about difficult cancer-related thoughts and feelings.'
Identified limitations	'rather than manipulating self-affirmation, cognitive processing, or discovery of meaning writing directly, we assessed the naturalistic occurrence of these statements in the context of an expressive writing trial. Although this limitation restricts our ability to make causal statements about improving health in breast cancer, benefits of this approach include the opportunity to compare the naturalistic uses of self-affirmation, cognitive processing, and discovery of meaning as coping strategies during breast cancer recovery and the opportunity to test for underlying psychological mechanisms in a widely used, expressive writing intervention. A second potential limitation is that the present study did not define the potential mediators as mutually exclusive categories, making it difficult to interpret correlations among the mediators or assess their independent contributions as orthogonal constructs. However, this approach was necessary due to the fact that the essays revealed clear instances in which a single statement could be coded to more than one category. This approach is unlikely to have influenced the results given the minimal overlap among the coding categories.'
Future research	'The present findings suggest that writing about valued aspects of the self reduces stress and promotes health and well-being, and it is hoped that these findings provide an impetus for considering the protective role of the self in future studies and interventions.'

Title	Expressive Disclosure and Benefit Finding Among Breast Cancer Patients: Mechanisms for Positive Health Effects
Authors	Carissa A. Low and Annette L. Stanton & Sharon Danoff-Burg
Year	2006
Journal	Health Psychology
Country of origin	USA
Aims	'A randomized trial (*n* _ 60; A. L. Stanton, S. Danoff-Burg, L. A. Sworowski, et al. 2002) revealed that 4 sessions of written expressive disclosure or benefit finding produced lower physical symptom reports and medical appointments for cancer-related morbidities at 3-month follow-up among breast cancer patients relative to a fact-control condition. The goal of this article is to investigate mechanisms underlying these effects. *Hypothesis 1.* Objective (i.e., heart rate [HR]) physiological activation and habituation within and across writing sessions will account for the health benefits in the EMO condition.2 *Hypothesis 2.* Subjective positive emotion and essay words indicating positive emotion will account for health benefits in the POS condition (we also explore the role of negative emotion as a mediator). *Hypothesis 3.* Essay words indicative of cognitive processing will mediate the health effects of both interventions.'
Design	Further analysed data from Stanton et al (2002).
Sample (patient group)	
Sample size	63
Inclusion/exclusion criteria	Participants were excluded from the study if they had a diagnosis of recurrent or metastatic disease or were unable to write in English. Three participants dropped out of the study due to a cancer recurrence (*n* = 2) or lack of interest (*n* = 1).
Ethnicity	Caucasian (93%), African American (5%), and Asian American (2%).
Age range	Participants ranged in age from 21 to 76 years old (*M* = 49.5)
Treatment type	within 20 weeks after completing cancer treatment (e.g., chemotherapy, surgery, radiotherapy)
Stage of cancer	early-stage (Stage I and II) female breast cancer patients
EWI description	'Participants were randomly assigned to one of three conditions and instructed to write about their (a) deepest thoughts and feelings regarding their experience with breast cancer (Emotional Expression), (b) positive thoughts and feelings regarding their experience with breast cancer (Benefit-Finding), or (c) facts regarding their cancer and its treatment (Fact-writing Control). For each writing session, participants were instructed to write continuously for 20 min. All procedures were IRB-approved. For a detailed description of the study, see Stanton et al. (2002).'
Follow-up period	'At 1 and three months after completing the last writing assignment, participants completed questionnaires assessing their physical symptoms, cancer-related doctor visits, general life satisfaction (as measured by the Satisfaction With Life Scale [SWLS]; Diener, Emmons, Larsen, & Griffin, 1985), and mood throughout the past week (as measured by the Profile of Mood States [POMS]; McNair et al. 1971).'
Measures used	'*Physical health variables.* At the final writing session, participants were given a form on which to record prospectively any medical visits over the subsequent three months. At the 3-month follow-up, these reports were confirmed through medical records for 20% of patients (*n* _ 12), with patients' consent, demonstrating 92% agreement (23 patient-

	reported appointments/ 25 medical records appointments). At baseline and three months after the final writing session, participants also completed a 9-item measure adapted from King and Emmons (1990) and Pennebaker (1982) to assess physical symptoms. Heart rate was assessed continuously during the four writing sessions. Immediately before and after writing each essay, participants completed a measure of state distress using the state form of the Profile of Mood States (McNair, Lorr, & Droppelman, 1971). A state distress index was created by averaging the Anger, Depression, Tension, Fatigue, and Confusion subscales (α = .80-.88).'
Data analysis	'A series of multiple regression equations were conducted using an analytic approach specified by Baron and Kenny (1986).'
Findings	'Within-session heart rate habituation mediated effects of expressive disclosure on physical symptoms, and greater use of negative emotion words in essays predicted a decline in physical symptoms. Postwriting mood and use of positive emotion and cognitive mechanism words in essays were not significant mediators, although greater cognitive mechanism word use was related to greater heart rate habituation and negative emotion word use.'
Manipulation checks	None.
Moderators	None.
Conclusions	'Taken together, findings suggest that the positive health outcomes observed in the expressive disclosure group may be related to the decreasing autonomic arousal that occurs as participants engage in emotional processing of negative memories (Bootzin, 1997; Jaycox et al. 1998). This prolonged and repeated exposure and concomitant processing might contribute to improved regulation of physiological responses, presumably leading to less stress on bodily systems and ultimately, enhanced physical health.'
Identified limitations	'First, the relatively small sample size limited the power of our analyses to detect significant mediators of the effects. A second limitation regards generalizability of results. Because our sample was limited to women with early stage breast cancers, the findings may not extend to patients with more advanced disease or men, for example. Finally, the reliance on participant self-report for assessment of physical health outcomes may have compromised validity, and it should be noted that evidence of mediation occurred only for self-reported physical symptoms, for which the clinical significance remains unclear.'
Future research	'There is much still to investigate with regard to the role of habituation in expressive writing. Because all women were writing about their cancer experience and thus the same general stimulus, our data do not allow a conclusion regarding whether stimulus-specific habituation or response-specific habituation is more important. Important goals of future research should be replication of these findings in a larger sample as well as exploration of alternative mediators of the interventions. Further, investigation of additional, more refined biological mediators, such as cytokine, endocrine, or parasympathetic nervous system activity, would also help to clarify the processes underlying the physical health effects of writing about emotional experiences.'

Title	**Written Emotional Disclosure Buffers the Effects of Social Constraints on Distress Among Cancer Patients**
Authors	Sandra G. Zakowski, Alona Ramati, and Carla Morton, Peter Johnson & Robert Flanagan
Year	2004

Journal	Health Psychology
Country	USA
Aims	'To examine whether written emotional disclosure would reduce distress among cancer patients and whether it would buffer the effects of high levels of social constraint (negative social responses to patients' expressions of emotion regarding their cancer) on distress.'
Design	RCT. Participants were randomly assigned to one of two experimental conditions, the emotional disclosure condition (n = 62) or the control condition
Sample (patient group and recruitment method)	'Patients who had been diagnosed with prostate or gynecological cancer within the past 5 years were recruited through clinics in the Chicago and Milwaukee metropolitan areas for a broader ongoing longitudinal study examining the psychosocial effects of emotional disclosure. Treating physicians referred eligible patients to the study.'
Sample size	'The final sample of 104 patients who completed all of the assessments necessary for the present analyses had been recruited over the course of 2 years.'
Inclusion/exclusion criteria	'Eligibility requirements included a first-time diagnosis of prostate or gynaecological cancer, completion of active cancer treatment, no evidence of psychiatric problems or any current life-threatening disease other than cancer, and ability to fluently read and write in English.'
Ethnicity	95.2% were Caucasian, 79.8% were married, 51% were employed, and 46.2% had at least a college education.
Age range	Patients were between 25 and 84 years of age (*M* = 59.75, *SD* = 11.09); 51.9% were female.
Treatment type	85.6% of patients had undergone surgery to treat their cancer.
Stage of cancer	'Types of cancer included prostate carcinoma (48.1%), uterine (18.3%), ovarian (13.5%), cervical (11.5), and other (4.9%); 3.8% of the patients had more than one type of cancer. Gleason scores, available for 40 of the prostate cancer patients, ranged from 3 to 8; the majority of these patients presented at Gleason Stage 6 (44%). Stages were available for 41 gynaecological cancer patients; these patients ranged from Stage I to Stage IV, with the majority presenting at Stage I (43%). Time since cancer diagnosis ranged from 0.14 to 4.96 years (*M* _ 1.43, *SD* _ 1.21).'
EWI description	'On completion of Assessment 1, participants were scheduled for 3 consecutive days on which they completed the writing task ("writing days"). In the rare event that a patient was unable to schedule 3 consecutive days, 3 days were scheduled as close to each other as possible and within the same 1-week period (10 participants completed the writing in 4 days, and 1 participant did so in 7 days). Instructions based on Pennebaker et al (1990). Participants in the emotional disclosure condition were told to write continuously for 20 min about their deepest thoughts and feelings regarding their cancer experience. Participants assigned to the control condition were asked to describe in detail their daily activities in a nonemotional manner in accord with previously published procedures (e.g., Pennebaker et al. 1990).'
Follow-up period	Baseline and six months.
Measures used	Social Constraints Scale (SCS) Brief Symptoms Inventory (BSI) Impact of Events Scale (IES)
Data analysis	'To examine whether emotional disclosure affected distress and buffered the effects of social constraints on distress at follow-up, we conducted a multiple regression analysis in which baseline distress (GSI score) was entered in Step 1, social constraints and experimental condition were entered in Steps 2 and 3, and their cross product was entered in Step 4.'
Findings	'As compared with participants in the control condition, participants in the disclosure condition rated their essays as significantly more personal, as shown by a significant condition main effect, *F*(1, 102) _ 20.25, *p* _ .001, and a Condition _ Writing Day interaction, *F*(2, 204) _

	3.58, *p* _ .04. Analyses (*t* tests) conducted for each writing day revealed significantly higher scores in the disclosure condition on all days, with the effects being strongest on Days 2 and 3. Similar results were found for the extent to which participants reported revealing their emotions in the essay, *F*(1, 102) _ 28.40, *p* _ .001, and there was a significant writing day main effect, *F*(2, 204) _ 5.23, *p* _ .01, suggesting an increase in emotionality across writing days. Thus, participant self-reports indicated that our emotional disclosure manipulation was successful. There was a significant main effect for baseline GSI score, but main effects for experimental condition and social constraints were nonsignificant. As expected, there was a significant Social Constraints _ Condition interaction (see Table 3). Regression lines plotted according to the criteria of Aiken and West (1991) revealed that participants in the control condition who reported high levels of social constraint exhibited the highest levels of distress at follow-up, whereas participants in the experimental group exhibited relatively low levels comparable to those of patients with low levels of constraint, thus supporting the buffering hypothesis'
Manipulation checks	'After each writing session, participants were asked specific questions regarding how personal they felt their essays were and the extent to which they felt they had revealed their emotions in the essays (Pennebaker, Kiecolt-Glaser, & Glaser, 1988). Each of these questions was rated on a 7-point scale.'
Moderators	'Entering avoidance at baseline and follow-up in the first and second steps of the regression equation rendered the Social Constraints _ Condition interaction nonsignificant (see Table 4). This suggests that changes in avoidance partly accounted for the buffering effect of emotional disclosure on distress.'
Conclusions	'The first hypothesis regarding the effects of expressive writing on distress was not supported. The nonsignificant main effect of experimental condition on distress suggests that written emotional expression was not effective for all cancer patients in this study. These findings are comparable to those of recent studies conducted with breast cancer patients that reported no significant differences in self-reported distress at follow-up (Stanton & Danoff-Burg, 2002; Walker et al. 1999). It has, however, been suggested that the benefits of writing for cancer patients may reside in more objective measures of health rather than selfreported distress (Stanton & Danoff-Burg, 2002), given that many cancer patients are quite well adjusted emotionally. The second hypothesis was supported by the results showing that written disclosure buffered the effects of social constraints on distress such that patients with high levels of constraint at study intake exhibited distress levels comparable to patients with low levels of constraint if they were given the opportunity to express their emotions in writing. Those at high constraint levels who were not given that opportunity (control condition) continued to exhibit heightened levels of distress at follow-up. These findings suggest that patients whose social environment precludes successful expression of emotion may be able to use other tools of emotional expression, specifically written emotional disclosure, to compensate for this deficit.'
Identified limitations	'It is possible that in-person contact was a beneficial element of the intervention the contribution of which has not previously been explored. In addition, asking patients to write about their cancer experience, a procedure used in both of the previous studies in this area conducted with cancer patients, may have been too constraining, and some of the patients might have benefited more from writing about other experiences that may have been more stressful to them. Although statistically significant, the clinical significance of the changes observed in the present study is unclear. Effect sizes were relatively small, and examination of patients' distress scores at baseline and follow-up using a cutoff score of one standard deviation above the mean of standard *t*-score norms revealed no significant Condition _ Social Constraints interaction. This suggests that, despite the fact that expressive writing buffered the effects of social constraints on distress, it did not alter distress levels from clinical to nonclinical categories. However, these results are limited by the fact that only a small proportion of patients were within the clinical range at study initiation (*n* _ 22). This does not minimize the importance of our findings. Given that many cancer patients exhibit subclinical levels of distress that may have a significant impact on other aspects of their lives, finding means of reducing their distress remains an important endeavor in health psychology.

	As in many previously published emotional disclosure studies (most of which were conducted with college students), the participants in this study were relatively well educated (almost half had a college degree). However, we did note a range from partial high school education to graduate professional training, and our results revealed no significant relations between education and any of the major study variables, suggesting that our results may be generalizable to individuals at various educational levels. This, however, should be addressed more systematically in future research.’
Future research	‘Finally, it is conceivable that a third variable accounted for the buffering effect of written disclosure. For example, a certain personality style or situational characteristic may be responsible for perceptions of social constraints and th e benefits drawn from written disclosure. For example, patients who have a greater need for emotional expression or greater interpersonal sensitivity may consider any amount of emotional support insufficient and may thus perceive heightened social constraints. These same individuals may benefit more from writing because it allows a relatively unlimited amount of emotional expression within the time limit of the experimental procedure. The SCS is unable to address this issue because it focuses on patients’ subjective perceptions. Although this was our measure of choice because of the theoretical importance of perceived over objective experiences of events (e.g., Lazarus & Folkman, 1984), future studies could examine this alternative explanation by supplementing self-report measures of social constraints with reports from supportive others as well as observational measures.’

Title	**Expressive disclosure and health outcomes in a prostate cancer population**
Authors	Rosenberg, H. J., Rosenberg, S. D., Ernstoff, M. S., Wolford, G. L., Amdur, R. J, Elshamy, M. R., Buar-Wu, S. M., Ahles, T. A., & Pennebacker, J. L.
Year	2002
Journal	Int J Psychiatry Med
Country of origin	USA
Aims	‘Explored the feasibility and efficacy of a brief, well-defined psychosocial intervention (expressive disclosure) in improving behavioural, medical, immunological and emotional health outcomes in men with prostate cancer.’
Design	‘Thirty prostate cancer patients receiving outpatient oncology care were randomised into experimental (disclosure) and control (non-disclosure) groups.’
Sample (patient group)	Thirty prostate cancer patients
Sample size	30. 16 experimentals and 14 controls
Inclusion/exclusion criteria	‘Inclusion criteria: over 18 years, histologic diagnosis of adenocarcinoma of the prostate being followed with serial PSAs; definitive local treatment (radiation or prostatectomy) within the last 4 years; routine monitoring of PSA levels prior to study enrolment; able to speak, read, and write in English; able to sign an informed consent form.’
Ethnicity	29 Caucasians and 1 native american
Age range	Mean age was 70.43 (SD = 5.42).
Treatment type	‘All had been previously treated by surgery or radiation within the last 4 years and were being monitored without further intervention for change in PSA levels.’
Stage of	Not reported.

cancer	
EWI description	'Writing instructions were as follows: During each of the four writing days, write about your experience with prostate cancer and its treatment. You may also write about other traumatic and upsetting experiences in your life. You can write on different topics each day or on the same topic each of the four days. It is very important that you write continuously for at least 20 minutes but not for longer than 30 minutes. Don't worry about grammar, sentence structure, form, spelling or any of that. Remember, please write continuously. Even if you have to repeat yourself, keep on writing. We'd appreciate it if you would not talk about your writing assignments with others until the 4 writing assignments have been completed.'
Follow-up period	3 and 6 months
Measures used	N abbreviated version of the questionnaire used in the National Medical Care Utilization and Expenditure Survey (assesses multiple forms of health care utilisation and behaviours over a specified time period). PSA values were obtained from medical chart review one year pre and post intervention. Peripheral blood T-cell proliferation to specified antigens was assessed by the cell census proliferation assay method. The Brief Pain Inventory (BPI) The Medical Outcomes Study – Short Form The Functional Assessment of Cancer Therapy Scale – Prostate (FACT) The Symptom Checklist 90 – revised The Brief Profile of Mood States (Brief POMS) Rumination Scale The Ways of Coping – Cancer Version
Data analysis	'Multivariate analysis (repeated measures MANOVA) with particular emphasis on group/time interactions were used to examine how expressive disclosure impacted the hypothesised domains of functioning: physical and psychological symptims; health care utilisation; and immunocompetence.'
Findings	'Compared to controls patients in the expressive disclosure condition showed improvements in the domains of physical symptoms and health care utilisation, but not in psychological variables nor In disease relevant aspects of immnocompetence. PSA specific and tetanux toxoid specific T-lymphocyte precursor frequencies were measurwed from peripheral blood samples at 3 time points. We did not find an effect of expressive disclosure on PSA- specific CD4 and CD8 T cell precursors. Comparing the experimental and control groups on the BPI pain severity factor scale, there was a statistically significant difference (F=3.98, df=2.0, p=.03) over time. Participants assigned to the disclosure intervention exhibited a trend towards a lower frequency of health care contacst (F = 2.65, df = 2.0, p = .09) and lower utilisation of medicines (F = 2.73, df = 2.0, p = .08) in comparison to participants assigned to control condition.'
Manipulation checks	None taken.
Moderators	None measured.
Conclusions	'Study results support the feasibility of an expressive disclosure intervention for men with prostate cancer. The intervention was well accepted and adherence was high. Results provide only limited support for the hypothesis that a written emotional disclosure task can positively impact health outcomes in a cancer population. However this pilot study may have lacked adequate power to detect possible intervention benefits.'
Identified limitations	'It is possible that positive immunologic response to expressive disclosure is more feasible in a physically well sample, and is more difficult to demonstrate in a population where immune function may already be stressed or compromised. In addition to beung ill, the prostate cancer patients we studied were also considerably older, on average, than most other populations who have participated in these disclosure studies. A more comprehensive health evaluation, including information on specific prescription medicines, lifetime alcohol and nicotine use, would have given us information on important variables known to affect immune function. A

	larger sample size, beyond the scope of this pilot study, would have provided a more robust evaluation of immune parameters.’
Future research	‘Further studies with larger samples are needed to better assess the interventions impact on psychological wellbeing and immunocompetence. Pain is an important quality of life and illness management issue for patients with prostate cancer. If our finding that expressive disclosure can impact reported level of pain severity is replicated in larger and more diverse samples, expressive disclosure might be seen as a worthwhile intervention for this population based on the pain outcome alone. Similarly our findings of reduced use of medications and reduced health care contacts would be important benefits for both patients and the health care system if they were to be replicated.’

Title	**A Pilot Study of the Effects of Expressive Writing on Psychological and Behavioural Adjustment in Patients Enrolled in a Phase II Trial of Vaccine Therapy for Metastatic Renal Cell Carcinoma**
Authors	De Moor
Year	2002
Journal	Health Psychology
Country of origin	USA
Aims	To evaluate the potential health benefits of EW in patients with metastatic renal cell carcinoma (RCC) who were participating in a Phase II clinical trial of vaccine therapy.
Design	RCT with EWI and NW groups
Sample (patient group)	Patients with newly diagnosed Stage IV RCC receiving an experimental tumor vaccine prepared from their own tumor specimen.
Sample size	42 total
Inclusion/exclusion criteria	Life expectancy greater than 4 months, a Zubrod performance status of 2, no serious intercurrent illnesses, and no brain metastases. Prior to enrolment in the Phase II trial, patients could not have had any chemotherapy or immunotherapy.
Ethnicity	Not reported.
Age range	Mean 56.4 years, 85.7% male
Treatment type	receiving an experimental tumor vaccine prepared from their own tumor specimen.
Stage of cancer	Stage IV
EWI description	EWI group were instructed to write about their deepest thoughts and feelings about their cancer. The instructions included specific writing prompts that varied slightly from one session to the nextbut remained essentially the same for each assignment. The NW group were instructed to write about a different health behaviour per session. (Diet, physical activity, substance use, sleep).
Follow-up period	4, 6, 8, 20 weeks
Measures used	Impact of Events Scale (IES) Perceived Stress Scale (PSS) Profile of Mood States (POMS) Pittsburgh Sleep Quality Index (PSQI)

Data analysis	Group comparisons of the psychological and behavioural adjustment measures were performed by regressing the follow-up assessments for each adjustment measure on time, group assignment, and the respective baseline assessment using mixed-model regression. Correlations among observations from the same individual were modelled by selecting the best-fitting variance-covariance matrix using the approach described by Wolfinger (1993).
Findings	No statistically significant differences were found between the groups in the IES total, IES subscales, the PSS, the POMS total, or POMS subscales, with the exception of the POMS Vigor subscale (ES = 0.82, p = .03). Statistically significant differences were found for four of the sleep disturbance measures: the PSQI total score (ES = -.73, p = .04) and three of the PSQI subscales scores, Sleep Quality (ES = -.99, p = .01), Sleep Duration (ES = -.87, p = .04) and Daytime Dysfunction (ES = 1.03, p = .04), with patients in the EW group reporting better sleep and daytime functioning.
Manipulation checks	None.
Moderators	None.
Conclusions	EW is beneficial for sleep but not other psychological variables.
Identified limitations	Small sample size, especially given the number of variables tested.
Future research	Larger sample sizes needed.

Title	**Randomized, Controlled Trial of Written Emotional Expression and Benefit Finding in Breast Cancer Patients**
Authors	Annette L. Stanton, Sharon Danoff-Burg, Lisa A. Sworowski, Charlotte A. Collins, Ann D. Branstetter, Alicia Rodriguez-Hanley, Sarah B. Kirk, and Jennifer L. Austenfeld
Year	2002
Journal	Journal of Clinical Oncology
Country of origin	USA
Aims	‘A randomized trial was performed to compare effects of experimentally induced written emotional disclosure and benefit finding with a control condition on physical and psychological adjustment to breast cancer and to test whether outcomes varied as a function of participants’ cancer-related avoidance.’
Design	‘assigned randomly to write over four sessions about (1) their deepest thoughts and feelings regarding breast cancer (EMO group; n 21), (2) positive thoughts and feelings regarding their experience with breast cancer (POS group; n 21), or (3) facts of their breast cancer experience (CTL group; n 18).
Sample (patient group)	Early-stage breast cancer patients completing medical treatment
Sample size	60
Inclusion/exclusion criteria	‘inclusion criteria of having a first diagnosis of stage I or II breast cancer and being within 20 weeks after completion of medical treatments (ie, surgery, radiotherapy, or chemotherapy). Exclusion criteria were diagnosis of recurrent or metastatic disease and inability to read or write English. ‘

Ethnicity	Most (93%) were white (5% African American; 2% Asian American),
Age range	mean age of 49.53 years (SD, 12.16 years; range, 21 to 76 years)
Treatment type	‘Average diagnosis duration was 28.37 weeks (SD, 9.95 weeks; range, 12 to 52 weeks). Mastectomy was received by 30%, breast conservation by 62%, and both surgical procedures by 8%. Most (75%) had received chemotherapy, 67% had received radiotherapy, 17% had undergone reconstructive surgery, and 52% were taking a selective estrogen receptor modula- tor (eg, tamoxifen) at the time of the study.’
Stage of cancer	I or II breast cancer
EWI description	“What I would like you to write about for these four sessions are your deepest thoughts and feelings about your experience with breast cancer. I realize that women with breast cancer experience a full range of emotions, and I want you to focus on any and all of them. In your writing, I want you to really let go and explore your very deepest emotions and thoughts. You might think about all the various feelings and changes that you experienced before being diagnosed, after diagnosis, during treatment, and now. Whatever you choose to write, it is critical that you really focus on your deepest thoughts and feelings. Ideally, I would like you to focus on feelings, thoughts, or changes that you have not discussed in great detail with others. You might also tie your thoughts and feelings about your experiences with cancer to other parts of your life, ie, your childhood, people you love, who you are, or who you want to be. Again, the most important part of your writing is that you really focus on your deepest emotions and thoughts. The only rule we have is that you write continuously for the entire time. If you run out of things to say, just repeat what you have already written. Don’t worry about grammar, spelling, or sentence structure. Don’t worry about erasing or crossing things out. Just write.’’
Follow-up period	Baseline, 1 month, three months
Measures used	POMS, FACT-T, questions on physical health outcomes.
Data analysis	‘Primary statistical procedures were multivariate analyses of covariance (MANCOVA), controlling for baseline values, on two conceptually related groups of variables, which are physical health-related outcomes (ie, somatic symptoms and medical care use) and psychological adjustment (ie, quality of life and positive and negative affect).’
Findings	‘Although analyses revealed no significant main effects for condition or cancer-related avoidance, a significant multivariate effect emerged for the condition avoidance interaction at 1 month (F[6,88] 5.14;P.0001) and at three months (F[6,92] 2.92; P .0118). In both cases, these were accompanied by a significant univariate interaction on POMS distress (F[2,48] 7.37; P.0016) at 1 month and three months (F[2,50] 4.80; P .0124). At three months, the multivariate condition effect on health-related outcomes was significant (F[4,100] 3.18; P .0166). Both self-reported physical symptoms and prospectively recorded medical appointments for cancer-related morbidities yielded a significant effect of Experimental conditions at three months. The EMO group evidenced a significant decrease in physical symptoms compared with the CTL group, and the POS group participants’ symptom scores fell between the other groups.’
Manipulation checks	‘The independent judge’s determination of the experimental condition assignment corresponding to each essay was correct for 95% of the 240 individual essays, indicating excellent adherence to experimental instructions by participants.’
Moderators	None.
Conclusions	‘Findings support the hypothesis that promoting expression of the full range of thoughts and feelings in breast cancer patients produces benefit with regard to the primary dependent variable of physical health-related outcomes. At three months, women who expressed their emotions through writing reported significantly fewer negative physical

	symptoms and had fewer medical appointments for cancer related morbidities than did CTL participants.’
Identified limitations	‘A first potential limitation includes a primary reliance on participant self report. However, questionnaire measures were psychometrically sound and empirically validated. Further, that medical appointments for cancer-related morbidities and self reported physical symptoms comprised valid indicators of physical health outcomes is supported by: (1) the Finding that a subset of self-reported medical appointments corresponded closely with medical records, (2) the positive association of the two indicators of health outcomes, and (3) their positive relations with psychological distress and poorer quality of life. It also should be noted that selfreported physical symptoms (and psychological distress) declined from study entry to the 3-month follow-up for all groups, indicating that the intervention effects resulted from a greater decline in symptoms in the experimental conditions than in the CTL condition rather than from amplification of symptoms in the CTL group. A second limitation regards generalizability of the findings. Participants evidenced somewhat more positive psychological adjustment than other samples, 7,18-20 and generalizability to very distressed or less motivated women requires study. Further, applicability of the findings to men, individuals with metastasized disease, and cancer patients at other points in the treatment trajectory and of diverse backgrounds warrants examination. Relatively small sample size.’
Future research	‘Clearly, the most appropriate format and timing of interventions to allow women to consider positive consequences of what typically is viewed as a stressful or traumatic experience require study. Extension of the findings to longer-term psychological adjustment and cancer morbidity and mortality also is necessary.’

Title	**Does Emotional Expression Make a Difference in Reactions to Breast Cancer?**
Authors	Walker, B, L., Nail, L. M., & Croyle, R. T.
Year	1999
Journal	Oncology Nursing Forum
Country of origin	USA
Aims	‘To examine the feasibility of using an emotional expression intervention with patients with cancer and test the hypothesis that emotional expression improves psychosocial adjustment.’
Design	Sequentially randomised pretest/post-test design with repeated measures.
Sample (patient group)	‘Women completing RT for stage I or II breast cancer, who spoke and read English, were independent in self care, and provided written consent.’
Sample size	44
Inclusion/exclusion criteria	‘Women who were 18 years or above, had a Karnofsky performance status of 70% or higher, were independent in self-care; were oriented to time, place and person; spoke and read English; and were completing RT for stage I or II breast cancer. The Karnofsky performance cut-off was chosen to avoid burdening patients who had multiple illnesses.’
Ethnicity	95% Caucasian
Age range	M = 53.6 years
Treatment type	Radiotherapy
Stage of cancer	I or II

EWI description	‘Participants were assigned sequentially to one of the treatment groups or a usual care control group. Usual care, in this setting, consists of preparing clients to begin treatment and providing written information and advice on managing specific side effects. The researchers used an adaptation of Pennebaker’s intervention that directed participants in each of the emotional expression groups to write specifically about their deepest thoughts and feelings about their cancer experience. Initially, all participants in the emotional expression groups completed the first writing in a quiet room at the clinic immediately following the last day of RT, and the researcher collected the writings. Participants who were assigned to write for 30 minutes on three separate days then completed the second and third writings at home during the next two to three days and returned them in a stamped, self-addressed envelope provided by the researchers.’
Follow-up period	1, 4-6, 16 and 28 weeks
Measures used	Impact of Events Scale Positive and Negative Affect Scale Sife Effect Severity Checklist
Data analysis	‘Separate repeated measures analysis of covariance were computed for each of the four outcomes. Trait negative affectivity and side effect severity were used as covariates, and group assignment was the between-groups factor in all of the analyses. A Bonferroni correction was applied to correct for the multiple statistical tests, setting the alpha at 0.0125 for main effects and interactions. No main effect of group or group-by-time interaction existed. ‘
Findings	‘No main effect of group or group-by-time interaction existed. Although analysis of covariance, using trait negative affectivity and side effect severity as covariates, indicated no effect from the intervention on any of the psychosocial adjustment measures, content analysis of the written essays revealed themes consistent with Pennebaker’s framework, such as end-of-treatment concerns, inhibition, and integration. Some women reported that the writing provided them a forum for expressing emotions they felt might be burdensome for family members or other confidants. Others indicated that the writing helped them to identify priorities or focus their concerns more specifically. Several of the women commented on the writing task itself, indicating that it was helpful or expressing surprise at the issues that came to mind as they wrote.’
Manipulation checks	Not reported.
Moderators	None.
Conclusions	‘The results of this pilot study demonstrate the feasibility of the emotional expression intervention. Although the emotional expression group experienced no benefit on measures of adjustment, comments on the value of writing as a way to help integrate the breast cancer experience and it identify future priorities expressed in both the written essays and at the seven month follow up visit suggest that writing about the experience may be helpful to some women.’
Identified limitations	‘Generalizability of results is limited by the small sample and corresponding low statistical power, as well as the relative homogeneity of the sample on demographic and clinical variables.’
Future research	‘Although many of the women expressed their belief that the writing exercise was helpful, a more extensive test of the emotional expression intervention is needed. The possibility of a subgroup of patients who benefit from writing should also be explored. Instruments for writing may need to be more targeted at encouraging subjects to respond to their previous writing and focus on integration tasks.’

APPENDIX C

Downs and Black tool for methodological quality

APPENDIX D

Methodological quality according to Downs and Blacks tool

Reporting analysis using the Downs and Black tool for assessing methodological quality

Author	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Arden-Close et al. (2013)	1	1	1	1	1	1	1	UTD	1	1
Craft et al. (2013)	1	1	1	1	1	1	0	UTD	1	1
Jensen-Johansen et al. (2012)	1	1	1	1	1	1	0	UTD	0	0
Mosher et al. (2012)	1	1	1	1	1	1	1	UTD	0	1
Zakowski et al. (2011)	1	1	1	0	1	1	1	UTD	1	0
Gellaitry et al. (2010)	1	1	1	1	1	1	1	UTD	1	0
Low et al. (2010)	1	1	1	1	1	1	1	UTD	1	1
Cepeda et al. (2008)	1	1	1	1	1	1	0	UTD	1	1
De Moor et al. (2008)	1	1	1	1	1	1	1	UTD	1	1
Bruera et al. (2008)	1	1	1	1	1	1	1	UTD	0	0
Creswell et al. (2007)	1	1	1	1	1	1	1	UTD	0	1
Low et al. (2006)	1	1	1	1	1	1	1	UTD	1	0
Zakowski et al. (2004)	1	1	1	1	1	1	1	UTD	0	0
Rosenburg et al. (2002)	1	1	1	1	1	1	0	UTD	1	1
De Moor et al. (2002)	1	1	1	0	1	1	1	UTD	0	1
Stanton et al. (2002)	1	1	1	1	1	1	1	UTD	1	1
Walker, Nail & Croyle (1999)	1	1	1	1	1	1	1	UTD	1	1

1. Is the hypothesis/aim/objective of the study clearly described?
2. Are the main outcomes to be measured clearly described in the Introduction or Methods section?
3. Are the characteristics of the patients included in the study clearly described?
4. Are the interventions of interest clearly described?
5. Are the distributions of principal confounders in each group of subjects to be compared clearly described?
6. Are the main findings of the study clearly described?
7. Does the study provide estimates of the random variability in the data for the main outcomes?
8. Have all important adverse events that may be a consequence of the intervention been reported?
9. Have the characteristics of patients lost to follow-up been described?
10. Have actual probability values been reported (e.g. 0.035 rather than <0.05) for the main outcomes except where the probability value is less than 0.001?

External validity and power analysis using the Downs and Black tool for assessing methodological quality

Author	11	12	13	14
Arden-Close et al (2013)	1	1	1	1
Craft et al (2013)	1	1	1	1
Jensen-Johansen et al (2012)	1	1	1	1
Mosher et al (2012)	1	1	1	1
Zakowski et al (2011)	1	1	1	1
Gellaitry et al (2010)	1	1	1	0
Low et al (2010)	1	1	1	1
Cepeda et al (2008)	1	1	1	1
De Moor et al (2008)	1	1	1	0
Bruera et al (2008)	1	1	1	0
Creswell et al (2007)	1	1	1	1
Low et al (2006)	1	1	1	1
Zakowski et al (2004)	1	1	1	0
Rosenburg et al (2002)	1	1	1	0
De Moor et al (2002)	1	1	1	0
Stanton et al (2002)	1	1	1	1
Walker, Nail & Croyle (1999)	1	1	1	0

11. Were the subjects asked to participate in the study representative of the entire population from which they were recruited?
12. Were those subjects who were prepared to participate representative of the entire population from which they were recruited?
13. Were the staff, places, and facilities where the patients were treated, representative of the treatment the majority of patients receive?
14. Did the study have sufficient power to detect a clinically important effect where the probability value for a difference being due to chance is less than 5%?

Internal validity (bias) using the Downs and Black tool for assessing methodological quality

Author	15	16	17	18	19	20	21
Arden-Close et al (2013)	1	1	1	1	1	1	1
Craft et al (2013)	1	UTD	1	1	1	0	1
Jensen-Johansen et al (2012)	UTD	UTD	1	1	1	1	1
Mosher et al (2012)	1	UTD	1	1	1	1	1
Zakowski et al (2011)	1	UTD	1	1	1	1	1
Low et al (2010)	1	1	1	UTD	1	0	1
Cepeda et al (2008)	1	1	1	1	1	1	1
De Moor et al (2008)	UTD	UTD	1	1	1	0	1
Bruera et al (2008)	UTD	UTD	1	1	1	0	1
Creswell et al (2007)	UTD	1	1	1	1	1	1
Gellaitry et al (2010)	UTD	UTD	1	1	1	1	1
Low et al (2006)	1	UTD	1	1	1	1	1
Zakowski et al (2004)	UTD	UTD	1	1	1	1	1
Rosenburg et al (2002)	UTD	UTD	1	1	1	1	1
De Moor et al (2002)	UTD	UTD	1	1	1	1	1
Stanton et al (2002)	1	1	1	1	1	1	1
Walker, Nail & Croyle (1999)	0	1	1	0	1	1	1

15. Was an attempt made to blind study subjects to the intervention they have received?
16. Was an attempt made to blind those measuring the main outcomes of the intervention?
17. If any of the results of the study were based on “data dredging”, was this made clear?
18. Do the analyses adjust for different lengths of follow-up of patients?
19. Were the statistical tests used to assess the main outcomes appropriate?
20. Was compliance with the intervention/s reliable?
21. Were the main outcome measures used accurate (valid and reliable)?

Internal validity (confounding) using the Downs and Black tool for assessing methodological quality

Author	22	23	24	25	26	27	Total score
Arden-Close et al (2013)	1	1	1	1	1	1	26
Craft et al (2013)	1	1	1	UTD	0	1	21
Jensen-Johansen et al (2012)	1	1	1	UTD	1	1	20
Mosher et al (2012)	1	1	1	UTD	1	1	23
Zakowski et al (2011)	1	1	1	UTD	0	1	21
Gellaitry et al (2010)	1	1	1	UTD	1	1	21
Low et al (2010)	1	1	1	1	1	1	24
Cepeda et al (2008)	1	1	1	1	1	1	25
De Moor et al (2008)	1	1	1	UTD	1	1	21
Bruera et al (2008)	1	1	1	UTD	0	1	18
Creswell et al (2007)	1	1	1	UTD	1	1	23
Low et al (2006)	1	1	1	UTD	1	1	23
Zakowski et al (2004)	1	1	1	UTD	1	1	20
Rosenburg et al (2002)	1	1	1	UTD	0	1	20
De Moor et al (2002)	1	1	1	UTD	1	1	20
Stanton et al (2002)	1	1	1	1	1	1	26
Walker, Nail & Croyle (1999)	1	UTD	1	1	0	1	21

22. Were the patients in different intervention groups recruited from the same population?
23. Were study subjects in different intervention groups recruited over the same period of time?
24. Were study subjects randomised to intervention groups?
25. Was the randomised intervention assignment concealed from both patients and health care staff until recruitment was complete and irrevocable?
26. Was there adequate adjustment for confounding in the analyses from which the main findings were drawn?
27. Were losses of patients to follow-up taken into account?

APPENDIX E

Risk of bias with supporting statements for each study

Arden Close et al (2013)

Bias	Authors judgement	Support for judgement
Random sequence allocation (selection bias)	-	Quote: 'Randomisation was conducted before study commencement, in blocks of 10, using www.randomization.com, matching for recurrence since initial diagnosis, to increase the probability of obtaining equivalent groups regarding prognosis.'
Allocation concealment (selection bias)	-	Quote: 'Opaque envelopes were numbered, and the appropriate condition was written inside each envelope according to the randomisation table, which was then destroyed. The envelopes were locked in a cabinet and inaccessible to anyone involved in the project. An independent administrator opened the cabinet and the appropriate envelope and informed the first author of group assignment, after which the appropriate task was posted out.'
Blinding of participants and researchers (performance bias)	-	Quote: 'As a single researcher carried out this study, double blinding was not possible. Participants were informed that writing had improved health across a variety of illnesses, and they would be asked to write about events in either an emotional or a non-emotional way, to ensure expectations did not differ by group.'
Blinding of outcome assessment (detection bias)	-	Quote: 'To reduce risk of measurement bias, questionnaires were returned to a researcher who had no contact with the participants and was unaware of group allocation.'
Incomplete outcome data (attrition bias)	-	Quote: 'Analyses controlled for baseline demographic and illness differences between groups and were intention-to-treat, by carrying the last observation forward.'
Selective reporting	-	All prespecified outcomes were reported.

Craft et al (2013)

Bias	Authors judgement	Support for judgement
Random sequence allocation (selection bias)	U	States participants were 'sequentially randomised' but no further information given.
Allocation concealment (selection bias)	U	Not reported.
Blinding of participants and researchers (performance bias)	U	Participants instructions did not mention allocation or expected benefits. Researcher blinding not reported.
Blinding of outcome assessment (detection bias)	U	Not reported.
Incomplete outcome data (attrition bias)	-	Quote: 'A decision to report the findings of the sample of 97, rather than the 70 who completed all three testings, was based on the fact that the ITT analysis revealed essentially the same results.'
Selective reporting	-	All prespecified outcomes were reported.

Mosher et al (2012)

Bias	Authors judgement	Support for judgement
Random sequence allocation (selection bias)	-	Quote: ‘Computerized random assignment to the expressive writing or neutral writing group then occurred using the method of random permuted block.’
Allocation concealment (selection bias)	U	Not reported.
Blinding of participants and researchers (performance bias)	U	Not reported.
Blinding of outcome assessment (detection bias)	U	Not reported.
Incomplete outcome data (attrition bias)	U	No mention of intention-to-treat analysis.
Selective reporting	-	All prespecified outcomes were reported.

Jensen-Johansen et al (2012)

Bias	Authors judgement	Support for judgement
Random sequence allocation (selection bias)	-	Quote: ‘The randomization was conducted independently by the Research Unit for Clinical Cancer Research, Aarhus University Hospital, using a stratified sampling method with four mutually exclusive strata reflecting the four standard adjuvant cancer treatment protocols (chemotherapy, radiotherapy, both, or none), and was concealed until intervention assignment.’
Allocation concealment (selection bias)	-	As above.
Blinding of participants and researchers (performance bias)	-	Quote: ‘The trial hypotheses were masked by officially naming the project the ‘Stress-Management & Quality-of-Life Brief Writing Exercise Program’. Furthermore, participants were told that they were randomized to one of several groups and that the writing tasks of the other participants would not be revealed.’
Blinding of outcome assessment (detection bias)	U	Not reported.
Incomplete outcome data (attrition bias)	-	Losses to follow up were disclosed and no differences were found between completers and non-completers, however intention to treat analysis was not conducted.
Selective reporting	-	All prespecified outcomes were reported.

Zakowski et al. (2011)

Bias	Authors judgement	Support for judgement
Random sequence allocation (selection bias)	U	Simply states participants were randomised, does not say how.
Allocation concealment (selection bias)	U	Not reported.
Blinding of participants and researchers (performance bias)	U	Participants blinding not reported. Quote: ‘Because the experimenters also administered the writing instructions they were not blind to condition, however, given that contact was minimal at follow-up assessments (except for mailing the questionnaires and placing a reminder phone call) we consider the possibility of experimenter bias to be minimal.’
Blinding of outcome assessment (detection bias)	U	Not reported.
Incomplete outcome data (attrition bias)	-	Describes characteristics of noncompleters, and found those who discontinued the study were more likely to have other chronic illnesses, *p* < .05. An intention-to-treat analysis was not used.
Selective reporting	-	All prespecified outcomes were reported.

Gellaitry et al (2010)

Bias	Authors judgement	Support for judgement
Random sequence allocation (selection bias)	-	Quote: ‘Participants were aware that they would be randomised, using computer-generated random number tables, to either a writing or non-writing group on return of baseline questionnaires.’
Allocation concealment (selection bias)	U	Not reported.
Blinding of participants and researchers (performance bias)	U	Not reported.
Blinding of outcome assessment (detection bias)	U	Not reported.
Incomplete outcome data (attrition bias)	-	Quote: ‘Participants who completed the study did not significantly differ from those who did not on age, clinical or psychological measures taken at baseline.’
Selective reporting	-	All data reported.

Low et al (2010)

Bias	Authors judgement	Support for judgement
Random sequence allocation (selection bias)	-	Quote: ‘The randomization schedule was created by a biostatistician using a computerized random numbers generator.’
Allocation concealment (selection bias)	-	Quote: ‘Sequentially numbered envelopes were used to conceal allocation.’
Blinding of participants and researchers (performance bias)	U	Not reported.
Blinding of outcome assessment (detection bias)	U	Not reported.
Incomplete outcome data (attrition bias)	-	Describes characteristics of noncompleters, and found no differences between completers and noncompleters. An intention-to-treat analysis was not used.
Selective reporting	-	All prespecified outcomes were reported.

Cepeda et al (2008)

Bias	Authors judgement	Support for judgement
Random sequence allocation (selection bias)	-	Quote: ‘For the randomization, we used a computer-generated random number program (STATA, version 9SE).’
Allocation concealment (selection bias)	-	Quote: ‘We concealed the randomization schedule using serially numbered, sealed, opaque envelopes.’
Blinding of participants and researchers (performance bias)	-	Participants blinding not reported. Quote: ‘A second research nurse who was unaware of patients’ group assignments then collected information for the study. Weekly follow-up phone calls were made by research personnel unaware of patient allocation.’
Blinding of outcome assessment (detection bias)	-	Quote: ‘A second research nurse who was unaware of patients’ group assignments then collected information for the study. Weekly follow-up phone calls were made by research personnel unaware of patient allocation.’
Incomplete outcome data (attrition bias)	-	Intention-to-treat analysis was used.
Selective reporting		All prespecified outcomes were reported.

de Moor et al (2008)

Bias	Authors judgement	Support for judgement
Random sequence allocation (selection bias)	-	'Patients were then assigned to the EW or neutral writing (NW) group using adaptive randomisation to achieve group balance on disease, treatment and patient characteristics'.
Allocation concealment (selection bias)	U	Not reported.
Blinding of participants and researchers (performance bias)	U	Not reported.
Blinding of outcome assessment (detection bias)	U	Not reported.
Incomplete outcome data (attrition bias)	-	62% completion rate. No differences between completers and noncompleters in demographic or clinical characteristics.
Selective reporting	-	All prespecified outcomes were reported.

Bruera et al (2008)

Bias	Authors judgement	Support for judgement
Random sequence allocation (selection bias)	U	Simply states they were randomly assigned.
Allocation concealment (selection bias)	U	Not reported.
Blinding of participants and researchers (performance bias)	U	Not reported.
Blinding of outcome assessment (detection bias)	U	Not reported.
Incomplete outcome data (attrition bias)	+	Only 8% completion rate.
Selective reporting		All prespecified outcomes were reported.

Creswell et al (2007)

Bias	Authors judgement	Support for judgement
Random sequence allocation (selection bias)	U	Simply states that they were randomised.
Allocation concealment (selection bias)	U	Not reported.
Blinding of participants and researchers (performance bias)	U	Blinding of participants not reported.
Blinding of outcome assessment (detection bias)	-	Quote: 'The 240 essays (60 participants × 4 essays) were content analyzed by trained coders who were blind to the study hypotheses and the participants' writing condition.'
Incomplete outcome data (attrition bias)	U	States that 3 people dropped out and why, but does not describe characteristics of noncompleters. Analysis did not include noncompleters.
Selective reporting	-	All prespecified outcomes were reported.

Low et al (2006)

Bias	Authors judgement	Support for judgement
Random sequence allocation (selection bias)	U	Simply states that they were randomised.
Allocation concealment (selection bias)	U	Not reported.
Blinding of participants and researchers (performance bias)	-	Participants were blinded. Quote: ‘They were informed by research staff or medical personnel that the purpose of the study was “to learn more about how women adjust to having breast cancer” and were told that they would be asked to write about their experiences with breast cancer.’ Researchers who gave writing instructions were blind to hypotheses.
Blinding of outcome assessment (detection bias)	U	Not reported.
Incomplete outcome data (attrition bias)	-	All participants who completed the baseline assessment completed the study.
Selective reporting	-	All prespecified outcomes were reported.

Zakowski et al (2004)

Bias	Authors judgement	Support for judgement
Random sequence allocation (selection bias)	U	Simply says that participants were randomised.
Allocation concealment (selection bias)	U	Not reported.
Blinding of participants and researchers (performance bias)	U	Blinding of participants not reported. Quote: ‘Because experimenters also administered the writing instructions, they were aware of condition assignments; however, given that contact was minimal at the follow-up assessments (except for mailing of the questionnaires and placing of a reminder phone call), we consider the possibility of experimenter bias to be minimal.’
Blinding of outcome assessment (detection bias)	U	Not reported.
Incomplete outcome data (attrition bias)	-	Losses to follow up were disclosed and no differences were found between completers and non-completers, however intention to treat analysis was not conducted.
Selective reporting	-	All prespecified outcomes were reported.

Rosenburg et al (2002)

Bias	Authors judgement	Support for judgement
Random sequence allocation (selection bias)	U	Simply says participants were randomised, does not explain how.
Allocation concealment (selection bias)	U	Not reported.
Blinding of participants and researchers (performance bias)	U	Researchers blind to condition prior to baseline assessment. Participant blinding not reported.
Blinding of outcome assessment (detection bias)	U	Not reported.
Incomplete outcome data (attrition bias)	-	All participants who completed the baseline assessment completed the study.
Selective reporting	-	All prespecified outcomes were reported.

de Moor et al (2002)

Bias	Authors judgement	Support for judgement
Random sequence allocation (selection bias)	-	Quote: ‘Participants were randomised using minimisation, a form of adaptive randomisation that results in better group balance than stratification. Patient characteristics used for assignment in this study were gender, number of metastases and non-lung metastatic involvement.’
Allocation concealment (selection bias)	U	Not reported.
Blinding of participants and researchers (performance bias)	U	Not reported.
Blinding of outcome assessment (detection bias)	U	Not reported.
Incomplete outcome data (attrition bias)	-	Losses to follow up were disclosed, however differences between completers and noncompleters were not explored, and intention-to-treat analysis was not used.
Selective reporting	-	All data reported.

Stanton et al (2002)

Bias	Authors judgement	Support for judgement
Random sequence allocation (selection bias)	-	Quote: 'The randomization schedule was created by the first author using a computerized random numbers generator.'
Allocation concealment (selection bias)	-	Quote: 'Sequentially numbered envelopes were used to conceal allocation'
Blinding of participants and researchers (performance bias)	-	Quote: 'The study coordinator did not have access to the randomization schedule, which was kept in a separate office throughout the study. The informed consent form included no mention of expected benefits from the writing conditions.'
Blinding of outcome assessment (detection bias)	-	Quote: 'The study coordinator did not have access to the randomization schedule, which was kept in a separate office throughout the study.'
Incomplete outcome data (attrition bias)	-	Quote: 'In addition to the 60 participants that composed the sample for analyses, 14 women were recruited for the study but did not complete it for reasons as follows (Table 1): two women declined on study recruitment, four consented to the study but did not complete the baseline questionnaire, five completed the baseline questionnaire but then terminated participation before randomization, two were diagnosed with cancer recurrence and terminated participation after completing the baseline questionnaire but before attending the writing sessions (thus, they were not aware of condition assignment), and one declined further participation after completing one control condition writing session. Thus, 81% of the women introduced to the research completed it, and only one who terminated participation was aware of her condition assignment.'
Selective reporting	-	All data reported

Walker, Nail & Croyle (1999)

Bias	Authors judgement	Support for judgement
Random sequence allocation (selection bias)	U	Simply states that participants were assigned sequentially.
Allocation concealment (selection bias)	U	Not reported.
Blinding of participants and researchers (performance bias)	U	Not reported.
Blinding of outcome assessment (detection bias)	U	Not reported.
Incomplete outcome data (attrition bias)	-	Losses to follow up were disclosed, however differences between completers and noncompleters were not explored, and intention-to-treat analysis was not used.
Selective reporting	-	All data reported.

APPENDICES

EMPIRICAL PAPER

APPENDIX F

Letter from the local research ethics committee

APPENDIX G

Participant information sheet

UNIVERSITY OF
BIRMINGHAM

[redacted]

Participant Information Sheet

Resilience, Emotional Expression and Illness Beliefs in Cancer Survivors

Information about the research

We would like to invite you to take part in a research study. Before you decide, you need to understand why the research is being done and what it would involve for you.

Please take time to read the following information carefully. Talk to others about the study if you wish.

The study explores the way in which the thoughts and feelings that you have impact on the way you cope and adapt following illness.

Ask us if there is anything that’s not clear, or if you would like more information before deciding. Take time to decide whether or not you wish to take part.

What is the purpose of the study?

The concept of resilience can be helpful in providing some explanation of how individuals “bounce back” in the face of adversity. There appears to be a ‘knowledge gap’ in the research around the relationship between resilience, emotional expression and illness beliefs. We are interested in finding out why some cancer survivors are more vulnerable to distress than others.

We hope that this study will help us produce useful information for people in the future so that we can help identify cancer survivors that may be more vulnerable to anxiety and depression. Furthermore, this research may help develop interventions that may improve cancer patients’ resilience through considering their attitude towards emotional expression and perceptions about their illness.

Why have I been invited?

You’re being asked to take part in this study because you have had a diagnosis of cancer in the past. We are sending a questionnaire to people to find out about their views on their resilience, emotional expression, illness beliefs, psychological wellbeing and quality of life. We have used the cancer centre’s patient database in order to identify those who have completed cancer treatment in the last eight months. These individuals have been invited to take part. Although we do our very best to ensure that our records are correct and up to date, on occasion there may be an error in our system. If you think that you have been contacted by mistake, please accept our sincere apologies and feel free to contact us regarding this. We understand and appreciate that this could be a difficult time for you. We apologise if you have been sent this questionnaire at an inappropriate time.

What happens if I take part?

If you decide to take part we would like you to complete the questionnaire provided. It will take around 50 minutes to complete the questionnaire, however it could take up to 90 minutes if you take your time and take a break. You are only required to complete the questionnaire once.

We may wish to access your medical records to gain further information regarding your diagnosis and treatment for cancer. All information accessed will be treated confidentially and anonymised.

Do I have to take part?

It’s entirely up to you whether to take part or not. If you wish to complete the questionnaire we would be grateful if you could then return it in the FREEPOST envelope provided. If you do not wish to take part in the study please return the uncompleted questionnaire in the FREEPOST envelope provided.

What are the possible disadvantages and risks of taking part?

This study doesn’t involve any treatment or tests, so there is no physical risk involved. Some people may find it distressing being asked about their cancer experience.

What are the possible benefits of taking part?

You’ll have the satisfaction of knowing that others may be helped by this research in the future, but there are no direct benefits to you personally.

If you do decide to take part then we will donate £1 to Macmillan Cancer Support on your behalf.

What happens when the research study stops?

When all the questionnaires have been returned, a report will be prepared and the findings will be published in medical journals and at conferences. It will be several months before this happens. Once published, a summary of the report will be available to all participants who would like one, and will be published on the University of Birmingham’s website. All reports and publications will use the information collected in a way that makes sure that you cannot be identified.

What if there’s a problem?

It is possible that you may find the completion of the questionnaire distressing. If this is the case, and you realise that you are experiencing more distress than you were initially aware of, please feel free to contact the Cancer Psychology Service on 0121 3713617. If you find that you are upset, and it is during out of hours, you could contact a charity such as the Samaritans on 08457 909090.

If you have any complaint about the way you are dealt with during the study, please contact

[redacted]

What will happen if I don’t want to carry on with the study?

You can decide to leave the study at any time. This will have no effect on your care.

Will my taking part in this study be kept confidential?

Yes. We will follow ethical and legal practice and all the information about you will be handled in confidence. No-one except the researchers will be able to identify you.

Who has reviewed the study?

All research in the NHS is looked at by an independent group of people called a Research Ethics Committee, to protect your safety, rights, well-being and dignity. This study has been reviewed and given a favourable opinion by Solihull Research Ethics Committee.

How can I find out more?

[redacted]

Thank you for reading this information sheet

APPENDIX H

Measure pack

UNIVERSITY OF
BIRMINGHAM

[redacted]

Resilience in Cancer Survivors

Questionnaire Pack

[redacted]

[redacted]

Questionnaire information

This questionnaire is divided into a number of sections with questions examining your beliefs about cancer, your attitudes towards your health and expressing emotions, your resilience and well-being.

Example questions

Please read each section carefully for section specific instructions. Examples of common formats are below:

Example 1

Views about cancer	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
1 My treatment will be effective in curing my cancer	1	②	3	4	5

Questions in this table format require you to circle the number that represents how you feel about each particular statement. So if you felt that you disagreed with this question you would circle number 2.

Example 2

How would you rate your overall health during the last week?

1	2	3	4	5	6	7
Very poor						Excellent

Responses to this question require you to circle the number that represents your overall health over the last week. For example if you feel that your health has been very poor over the last week you would circle 1, 2, or 3; if you fell that your health has been good or excellent over the last week you would circle 5, 6 or 7. The specific number you select depends on how you rate your health.

PLEASE TRY TO ANSWER ALL OF THE QUESTIONS

Please state date completed questionnaire _ _ / _ _ / _ _

SECTION 1. Views about cancer – There are no "right" or "wrong" answers to the questions below, we are interested in your own views about cancer rather than what others have suggested to you

Views about cancer	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. From my experience cancer is a serious condition	1	2	3	4	5
2. From my experience cancer has major consequences on life	1	2	3	4	5
3. Cancer makes me feel afraid	1	2	3	4	5
4. From my experience even if you have no more symptoms after treatment, cancer never really goes away	1	2	3	4	5
5. From my experience there is nothing which can help cancer	1	2	3	4	5
6. I have a clear understanding about the cancer I experienced	1	2	3	4	5
7. From my experience there is a lot which can be done to control symptoms	1	2	3	4	5
8. From my experience cancer does not have much effect on life	1	2	3	4	5
9. From my experience cancer strongly affects the way some people see you	1	2	3	4	5
10. From my experience cancer has serious financial consequences	1	2	3	4	5
11. From my experience cancer causes difficulties for those who are close to you	1	2	3	4	5
12. I don't understand the cancer I've experienced	1	2	3	4	5
13. From my experience you get depressed when you think about cancer	1	2	3	4	5
14. From my experience the course of the cancer depends on the individual	1	2	3	4	5
15. From my experience nothing a person does will affect cancer	1	2	3	4	5
16. The cancer I've experienced is a mystery	1	2	3	4	5
17. From my experience a person's actions will have little affect on the outcome of cancer	1	2	3	4	5
18. From my experience cancer will improve in time	1	2	3	4	5
19. From my experience cancer is very unpredictable	1	2	3	4	5

20. From my experience treatment is effective in curing cancer	1	2	3	4	5
21. From my experience the negative effects of cancer can be prevented (avoided) by treatment	1	2	3	4	5
22. From my experience treatment can control cancer	1	2	3	4	5
23. From my experience a person could expect to have cancer for the rest of their life	1	2	3	4	5
24. The cancer I've experienced does not worry me	1	2	3	4	5
25. The cancer I've experienced doesn't make any sense to me	1	2	3	4	5
26. Cancer is likely to be permanent rather than temporary	1	2	3	4	5
27. From my experience what a person does can determine whether cancer gets better or worse	1	2	3	4	5
28. From my experience you have the power to influence cancer	1	2	3	4	5
29. From my experience when I think about cancer I get upset	1	2	3	4	5
30. From my experience cancer makes you feel angry	1	2	3	4	5
31. From my experience treatment for cancer will remove the disease forever	1	2	3	4	5
32. From my experience cancer makes me feel anxious	1	2	3	4	5
33. From my experience there is very little that can be done to improve cancer	1	2	3	4	5
34. Even if cancer is treated it will always come back	1	2	3	4	5
35. From my experience the symptoms of cancer are puzzling	1	2	3	4	5

SECTION 2. Possible causes of my cancer

There are no “right” or “wrong” answers to the questions below, we are interested in your own views about what could have contributed to causing your cancer rather than what others have suggested to you (including doctors and family)

Contributing causes	**No**	**Yes**
1. My cancer was caused by stress or worry	0	1

2. My cancer is hereditary – it runs in my family	0	1
3. My cancer was caused by a germ or virus	0	1
4. My cancer was caused by diet or eating habits	0	1
5. My cancer was due to chance or bad luck	0	1
6. My cancer was caused by poor medical care in the past	0	1
7. My cancer was caused by pollution in the environment	0	1
8. My cancer was caused by my mental attitude e.g. Thinking about life negatively	0	1
9. Family problems or worries caused my cancer	0	1
10. My cancer was caused by overworking	0	1
11. My cancer was caused by my emotional state e.g. feeling down, lonely, anxious, empty	0	1
12. My cancer was caused my ageing	0	1
13. My cancer was caused by alcohol	0	1
14. My cancer was caused by smoking	0	1
15. My cancer was caused by my personality	0	1
16. My cancer was caused by altered immunity	0	1
17. My cancer was caused by pressure at work	0	1

Please list in rank-order the three most important factors that you now believe caused <u>your cancer.</u> You may use any of the items from the box above or you may have additional ideas of your own.

1. ……………..

2. ………………

3………………

SECTION 3. Concern about cancer in the future

In thinking about the past week, please indicate how much you agree or disagree with each statement. There are no right or wrong answers.

	Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
1. Because cancer is unpredictable, I feel I cannot plan for the future	1	2	3	4	5
2. I will probably have a relapse in the next 5 years	1	2	3	4	5
3. My fear of having my cancer coming back gets in the way of my enjoying life	1	2	3	4	5
4. I am afraid of my cancer coming back	1	2	3	4	5
5. I am certain that I have been cured of cancer	1	2	3	4	5

SECTION 4. Your health

Please answer all of the questions. There are no “right” or “wrong” answers.

	Not at all	A little	Quite a bit	Very much
1. Do you have any trouble doing strenuous activities, like carrying a heavy shopping bag or a suitcase?	1	2	3	4
2. Do you have any trouble taking a long walk?	1	2	3	4
3. Do you have any trouble taking a short walk outside of the house?	1	2	3	4
4. Do you need to stay in bed or a chair during the day?	1	2	3	4
5. Do you need help with eating, dressing, washing yourself or using the toilet?	1	2	3	4
During the past week:				
6. Were you limited in doing either your work or other daily activities?	1	2	3	4
7. Were you limited in pursuing your hobbies or other leisure time activities?	1	2	3	4
8. Were you short of breath?	1	2	3	4

9. Have you had pain?	1	2	3	4
10. Did you need to rest?	1	2	3	4
11. Have you lacked appetite?	1	2	3	4
12. Have you felt nauseated?	1	2	3	4
13. Have you vomited?	1	2	3	4
14. Have you been constipated?	1	2	3	4
15. Have you had diarrhoea?	1	2	3	4
16. Have you had trouble sleeping?	1	2	3	4
17. Have you felt weak?	1	2	3	4
18. Were you tired?	1	2	3	4
19. Did pain interfere with your daily activities?	1	2	3	4
20. Have you had difficulty in concentrating on things, like reading a newspaper or watching television?	1	2	3	4
21. Did you feel tense?	1	2	3	4
22. Did you worry?	1	2	3	4
23. Did you feel irritable?	1	2	3	4
24. Did you feel depressed?	1	2	3	4
25. Have you had difficulty remembering things?	1	2	3	4
26. Has your physical condition or medical treatment interfered with your family life?	1	2	3	4
27. Has your physical condition or medical treatment interfered with your social activities	1	2	3	4
28. Has your physical condition or medical treatment caused you financial difficulties	1	2	3	4

For the following questions please circle the number between 1 and 7 that best applies to you

1. How would you rate your overall <u>health</u> during the last week?

1	2	3	4	5	6	7
Very poor						Excellent

2. How would you rate your overall quality of life during the past week?

1	2	3	4	5	6	7
Very poor						Excellent

SECTION 5. Emotional expression

This section contains questions asking about how you express emotions.

Please read each of the following statements carefully and indicate how much you agree or disagree with them, by circling the appropriate number on the right. Please answer all questions.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I think getting emotional is a sign of weakness.	1	2	3	4	5
2. Turning to someone else for advice or help is an admission of weakness.	1	2	3	4	5
3. It is shameful for a person to display his or her weaknesses.	1	2	3	4	5
4. People will reject you if they know your weaknesses.	1	2	3	4	5
5. If a person asks for help it is a sign of weakness.	1	2	3	4	5
6. When I am upset I bottle up my feelings.	1	2	3	4	5
7. When I am upset I usually try to hide how I feel.	1	2	3	4	5
8. I seldom show how I feel about things.	1	2	3	4	5

9. When I get upset I usually show how I feel.	1	2	3	4	5
10. I do not feel comfortable showing my emotions.	1	2	3	4	5
11. I think you should always keep your feelings under control.	1	2	3	4	5
12. I think you ought not to burden other people with your problems.	1	2	3	4	5
13. You should always keep your feelings to yourself.	1	2	3	4	5
14. You should always hide your feelings.	1	2	3	4	5
15. I should always have complete control over my feelings.	1	2	3	4	5
16. I think other people do not understand your feelings.	1	2	3	4	5
17. Other people will reject you if you upset them.	1	2	3	4	5
18. My bad feelings will harm other people if I express them.	1	2	3	4	5
19. If I express my feelings I am vulnerable to attack.	1	2	3	4	5
20. If other people know what you are really like, they will think less of you.	1	2	3	4	5

SECTION 6. Resilience

Please indicate how much you agree with the following statements as they apply to you over the last month. If a particular situation has not occurred recently, answer according to how you think you would have felt.

	Not True at All	Rarely True	Sometimes True	Often True	True nearly all the time
1. I am able to adapt when changes occur.	0	1	2	3	4
2. I have at least one close and secure relationship that helps me when I am stressed	0	1	2	3	4
3. When there are no clear solutions to my problems, sometimes fate or God can help.	0	1	2	3	4
4. I can deal with whatever comes my way.	0	1	2	3	4
5. Past successes give me confidence in dealing with new challenges and difficulties.	0	1	2	3	4
6. I try to see the humorous side of things when I am faced with problems.	0	1	2	3	4
7. Having to cope with stress can make me stronger.	0	1	2	3	4
8. I tend to bounce back after illness, injury, or other hardships.	0	1	2	3	4
9. Good or bad, I believe that most things happen for a reason.	0	1	2	3	4
10. I give my best effort no matter what the outcome may be.	0	1	2	3	4
11. I believe I can achieve my goals, even if there are obstacles.	0	1	2	3	4
12. Even when things look	0	1	2	3	4

hopeless, I don't give up.					
13. During times of stress/crisis, I know where to turn for help.	0	1	2	3	4
14. Under pressure, I stay focused and think clearly.	0	1	2	3	4
15. I prefer to take the lead in solving problems rather than letting others make all the decisions.	0	1	2	3	4
16. I am not easily discouraged by failure.	0	1	2	3	4
17. I think of myself as a strong person when dealing with life's challenges and difficulties.	0	1	2	3	4
18. I can make unpopular or difficult decisions that affect other people, if it is necessary.	0	1	2	3	4
19. I am able to handle unpleasant or painful feelings like sadness, fear, and anger.	0	1	2	3	4
20. In dealing with life's problems, sometimes you have to act on a hunch without knowing why.	0	1	2	3	4
21. I have a strong sense of purpose in life.	0	1	2	3	4
22. I feel in control of my life.	0	1	2	3	4
23. I like challenges.	0	1	2	3	4
24. I work to attain my goals no matter what roadblocks I encounter along the way.	0	1	2	3	4
25. I take pride in my achievements.	0	1	2	3	4

SECTION 7.

In the last 7 days, how distressed have you been by the following symptoms?

In the last 7 days, how distressed have you been by the following symptoms?	Not True at All	A Little Bit	Moderately	Quite a Bit	Extremely
1. Headaches	0	1	2	*3*	4
2. Nervousness or shakiness inside	0	1	2	3	4
3. Repeated unpleasant thoughts that won't leave your mind	0	1	2	3	4
4. Faintness or dizziness	0	1	2	3	4
5. Loss of sexual interest or pleasure	0	1	2	3	4
6. Feeling critical of others	0	1	2	3	4
7. The idea that someone else can control your thoughts	0	1	2	*3*	4
8. Feeling others are to blame for most of your troubles	0	1	2	3	4
9. Trouble remembering things	0	1	2	3	4
10.Worried about sloppiness or carelessness	0	1	2	3	4
11. Feeling easily annoyed or irritated	0	1	2	3	4
12. Pains in heart or chest	0	1	2	3	4
13. Feeling afraid in open spaces or on the streets	0	1	2	*3*	4
14. Feeling low in energy or slowed down	0	1	2	3	4
15. Thoughts of ending your life	0	1	2	3	4
16. Hearing voices that other	0	1	2	3	4

people do not hear					
17. Trembling	0	1	2	3	4
18. Feeling that most people cannot be trusted	0	1	2	3	4
19. Poor appetite	0	1	2	*3*	4
20. Crying easily	0	1	2	3	4
21. Feeling shy or uneasy with the opposite sex	0	1	2	*3*	4
22. Feelings of being trapped or caught	0	1	2	3	4
23. Suddenly scared for no reason	0	1	2	3	4
24. Temper outbursts that you could not control	0	1	2	3	4
25. Feeling afraid to go out of your house alone	0	1	2	3	4
26. Blaming yourself for things	0	1	2	3	4
27. Pains in lower back	0	1	2	*3*	4
28. Feeling blocked in getting things done	0	1	2	3	4
29. Feeling lonely	0	1	2	3	4
30. Feeling blue	0	1	2	3	4
31. Worrying too much about things	0	1	2	3	4
32. Feeling no interest in things	0	1	2	3	4
33. Feeling fearful	0	1	2	*3*	4
34. Your feelings being easily hurt	0	1	2	3	4
35. Other people being aware of your private thoughts	0	1	2	3	4
36. Feeling others do not understand you or are	0	1	2	3	4

unsympathetic					
37. Feeling that people are unfriendly or dislike you	0	1	2	3	4
38. Having to do things very slowly to insure correctness	0	1	2	3	4
39. Heart pounding or racing	0	1	2	*3*	4
40. Nausea or upset stomach	0	1	2	3	4
41. Feeling inferior to others	0	1	2	*3*	4
42. Soreness of your muscles	0	1	2	3	4
43. Feeling that you are watched or talked about by others	0	1	2	3	4
44. Trouble falling asleep	0	1	2	3	4
45. Having to check and double-check what you do	0	1	2	3	4
46. Difficulty making decisions	0	1	2	3	4
47. Feeling afraid to travel on buses, subways, or trains	0	1	2	*3*	4
48. Trouble getting your breath	0	1	2	3	4
49. Hot or cold spells	0	1	2	3	4
50. Having to avoid certain things, places, or activities because they frighten you	0	1	2	3	4
51. Your mind going blank	0	1	2	3	4
52. Numbness or tingling in parts of your body	0	1	2	3	4
53. A lump in your throat	0	1	2	*3*	4
54. Feeling hopeless about the future	0	1	2	3	4
55. Trouble concentrating	0	1	2	3	4
56. Feeling weak in parts of your body	0	1	2	3	4

57. Feeling tense or keyed up	0	1	2	3	4
58. Heavy feelings in your arms or legs	0	1	2	3	4
59. Thoughts of death or dying	0	1	2	*3*	4
60. Overeating	0	1	2	3	4
61. Feeling uneasy when people are watching or talking about you	0	1	2	3	4
62. Having thoughts that are not your own	0	1	2	3	4
63. Having urges to beat, injure, or harm someone	0	1	2	3	4
64. Awakening in the early morning	0	1	2	3	4
65. Having to repeat the same actions such as touching, counting, or washing	0	1	2	3	4
66. Sleep that is restless or disturbed	0	1	2	3	4
67. Having urges to break or smash things	0	1	2	3	4
68. Having ideas or beliefs that others do not share	0	1	2	3	4
69. Feeling very self-conscious with others	0	1	2	3	4
70. Feeling uneasy in crowds, such as shopping or at a movie	0	1	2	3	4
71. Feeling everything is an effort	0	1	2	3	4
72. Spells of terror or panic	0	1	2	3	4
73. Feeling uncomfortable about eating or drinking in public	0	1	2	3	4
74. Getting into frequent arguments	0	1	2	3	4

75. Feeling nervous when you are left alone	0	1	2	3	4
76. Others not giving you proper credit for your achievements	0	1	2	3	4
77. Feeling lonely even when you are with people	0	1	2	3	4
78. Feeling so restless you couldn't sit still	0	1	2	3	4
79. Feelings of worthlessness	0	1	2	3	4
80. The feeling that something bad is going to happen to you	0	1	2	3	4
81. Shouting or throwing things	0	1	2	3	4
82. Feeling afraid you will faint in public	0	1	2	3	4
83. Feeling that people will take advantage of you if you let them	0	1	2	3	4
84. Having thoughts about sex that bother you a lot	0	1	2	3	4
85. The idea that you should be punished for your sins	0	1	2	3	4
86. Thoughts and images of a frightening nature	0	1	2	3	4
87. The idea that something serious is wrong with your body	0	1	2	3	4
88. Never feeling close to another person	0	1	2	3	4
89. Feelings of guilt	0	1	2	3	4
90. The idea that something is wrong with your mind	0	1	2	3	4

SECTION 8. Information about you

1. **Are you currently?**

Single ☐ Married/living with a partner ☐ Divorced/Separated ☐ Widowed ☐

2a. Are you currently working?

Full time ☐ Part time ☐ Retired ☐ Homemaker ☐ Student ☐

Other (please specify) …………………………………………………..

2b. Occupation…………….. ……………………………...

- Hours worked before the diagnosis: ……..…………….
- Hours worked after the diagnosis: ……..…………….

3. What is your highest level of education?

No academic qualifications ☐

A-Level/Equivalent ☐

GCSE/O-Level/Equivalent ☐

Degree Level or Higher ☐

Other (please specify) …………………………………………………..

4. Do you…

Live alone ☐ Live with a partner ☐ Live with a partner and children ☐ Live with children ☐

Other (please state) ☐ ……...

5. Would you describe yourself as….

Black-Caribbean ☐

Black-African ☐

Black-Other ☐

Indian ☐

White ☐

Pakistani ☐

Bangladeshi ☐

Chinese ☐

Other (please specify):……..

6. **Religion:** ……………………………..

7. **Date of birth:** …………………………….

8. **Gender:** Male ☐ Female ☐

9. **Country of birth:** …………………………….

10. Comorbities:

Have you been diagnosed with any conditions other than cancer? Please state below

………

………

……..

Thank you for taking part in our study

APPENDIX I

Author Guidelines

[redacted]

[redacted]