

Review

# The role of relationship attachment in psychological adjustment to cancer in patients and caregivers: a systematic review of the literature

Wendy Nicholls<sup>1\*</sup>, Nick Hulbert-Williams<sup>2</sup> and Ros Bramwell<sup>2</sup>

<sup>1</sup>Department of Psychology, University of Wolverhampton, Wolverhampton, UK

<sup>2</sup>Department of Psychology, University of Chester, Chester, UK

\*Correspondence to:

Department of Psychology,  
University of Wolverhampton,  
Mary Seacole Building, Nursery  
Street, Wolverhampton, WV1  
1AD, UK. E-mail: Wendy.  
Nicholls@wlv.ac.uk

## Abstract

**Objective:** The objective of this work is to report the results of a systematic review to evaluate the role of attachment in adjustment to cancer for patients and those close to them.

**Methods:** A systematic search of electronic databases was undertaken, identifying literature published up to June 2013. PsychINFO, Medline and the Cumulative Index to Nursing & Allied Health Literature were searched using search strings related to cancer, relationships, attachment and commonly assessed self-report psychosocial outcome measures. Extracted papers were assessed for their relevance. Key data were extracted to spreadsheets, and two raters coded the quality of the research.

**Results:** Following inclusion assessment, data were extracted from 15 quantitative studies. Scores from patients or caregivers on attachment questionnaires did not differ greatly from normative data. A more insecure attachment style has poorer outcomes for patients in terms of their psychological adjustment to cancer and their ability to perceive and access social support. A secure attachment style is associated with positive growth and better well-being. A more insecure attachment style in caregivers was associated with depression, higher caregiving stress, less autonomous motivations for caregiving and difficulties with caregiving.

**Conclusions:** An awareness of attachment theory and the ways in which different forms of insecure attachment impact on patients and caregivers and their well-being may substantially improve the ability of those working with cancer patients and their families to better understand and provide for their support needs. The development and evaluation of support interventions tailored to different attachment styles remains a longer-term goal.

Copyright © 2014 John Wiley & Sons, Ltd.

Received: 23 December 2013

Revised: 1 August 2014

Accepted: 11 August 2014

## Introduction

The term ‘adjustment’ is used within psychosocial oncology to refer to cognitive and behavioural mechanisms people use when dealing with the specific threat to well-being of cancer diagnosis and treatment [1]. The term adjustment relates to emotional, social and physical challenges that sometimes involve significant psychological symptoms and quality-of-life disruptions. Up to 75% of patients report substantial and problematic psychological distress [2]. Although this does not always lead to psychiatrically diagnosable illnesses, psychosocial factors can influence patients’ treatment outcomes, disease progression and survival [3]. It is important, therefore, to explore the comparative contribution of individual differences in cancer-related adjustment.

Interpersonal relationships are known to influence coping responses to life events, including illness diagnosis for the self, relatives or friends [4,5]. Social support (and satisfaction with it especially) is a known correlate of cancer-related adjustment [6–8]. Exploring the role of interpersonal relationships in adjustment could have important

implications for understanding how to improve patient experiences by addressing unmet supportive care needs [9]. Individuals within a support network bring their own individual differences, which have a pivotal role in the type and level of support they provide. Some studies show that relationship improvement is an important example of benefit finding following cancer [10]; others demonstrate that the stress of cancer can negatively affect relationships (e.g. by leading to resentment) [11]. Any explanation of adjustment, therefore, should take account of the dyadic nature of coping and adjustment, including the role of attachment.

The term attachment describes the security of an individual’s relationships with others, usually parents or romantic partners [12–14]. Although it is usual to seek security from others in time of need, maladaptive patterns can occur. Either the attachment system is hyperactive and the individual seeks a high degree of proximity to others (anxious attachment style) or the system is deactivated and the individual is dismissive of others, withdrawing from support (avoidant attachment style). These maladaptations may increase vulnerability to stress or depression [15]. Clinically,

depressive symptoms are typically reported in insecurely attached individuals [16,17], and the securely attached make better adjustment to stressors, including ill health [18–20] and chronic illness [21]. The attachment system also provides expectations of other people's behaviour and has explained coping patterns in a variety of stressful situations [22,23].

Attachment style is formed in early infancy through interactions with the main caregiver and is relatively stable throughout the lifespan. During young adulthood, attachment transfers from main caregivers to peers or a romantic partner [24], and this may have important implications for timing of cancer onset. Experiencing cancer as a young adult would be expected, for example, to disrupt the development of attachment as the patient would experience being cared for at a critical time of developing independence.

Attachment is also an important consideration for the caregiver, affecting how they cope with diagnosis and influencing provision and quality of care [25–28]. More secure attachment is related to sensitive and co-operative caregiving and more emotional care; an insecure model of other is associated with less involvement in caregiving and poor caregiving; an insecure model of self is associated with a controlling caregiving style and less emotional care [29]. Generally, those with insecure attachment experience more distress and difficulties with adjustment to caregiving [30–32], reporting higher levels of distress and depression [29].

Attachment theory offers a comprehensive framework to understand and predict variance in the psychosocial impact of cancer on patients and those close to them. It has the advantage that it includes multifaceted perspectives on personal experiences, caregiving, stress and coping, and eliciting and evaluating social support. Within cancer, attachment style might be both affected by illness experiences, especially at specific life stages, and an important predictor of well-being.

## Aim

This review aims to systematically evaluate and synthesise previous research on attachment and psychological adjustment to cancer. Specifically,

- to describe the attachment styles of cancer patients and those in relationships with them and to compare these with available normative data;
- to evaluate the role of attachment in psychosocial outcomes in cancer patients;
- to explore the interaction between attachment and the wider cancer experience where this emerges in the included literature; and
- to evaluate the role of attachment in experience and quality of caregiving.

## Method

To ensure methodological rigour, we adhered to standard methodology for systematic reviewing [33–35]. The aims, inclusion criteria, data extraction and data quality evaluation were specified at the outset to ensure objectivity and replicability.

## Searches

A systematic search of electronic databases was undertaken, identifying literature published up to June 2013. PsychINFO, Medline and the Cumulative Index to Nursing & Allied Health Literature were searched using terms related to cancer, relationships, attachment and commonly assessed psychosocial outcomes (Supporting information). A call for unpublished research was also made through proposal presentations at one national and one international psychoncology conference.

## Inclusion assessment

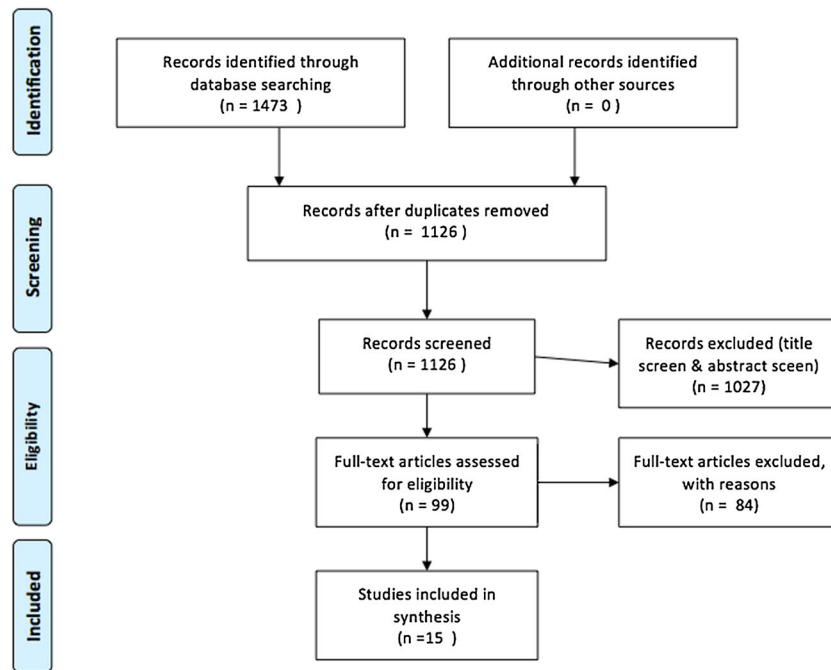
Citations were managed using Endnote. After deduplication, two reviewers independently screened paper titles and abstracts. Where there was disagreement, the full-text manuscript was consulted by both reviewers to reach agreement. For a paper to be included, both needed to agree that the following criteria were met:

- a. reported empirical research (e.g. not case studies, letters and commentaries);
- b. used a self-report assessment of attachment;
- c. reported on attachment of a patient to (i) a spouse/romantic partner, (ii) a family member and (iii) a carer;
- d. at least one of the dyad to be a cancer survivor;
- e. assessed at least one psychosocial outcome variable (e.g. anxiety, depression and quality of life); and
- f. published in English.

The search yielded 1473 references (Figure 1). Of these, 15 explicitly measured attachment, thus meeting inclusion criteria. Papers reporting other relationship variables (e.g. relationship satisfaction) were excluded.

## Data quality

Quality of included papers was assessed by two reviewers using the standard quality assessment for evaluation of primary research papers [36]. Studies were evaluated on the basis of on 20 criteria spanning design, sampling, methodology, analysis, results and conclusions. For each criterion, papers scored either 2 (good), 1 (partial fulfilment), 0 (not fulfilled) or X (not relevant) (possible score range 0–40). Scores were summed for each paper to give an overall rating of quality.



**Figure 1.** Selection of Studies for Inclusion in Review

### Data extraction

Data extraction parameters were established in line with research questions and managed using Excel. Data extraction headings included details about samples, cancer diagnosis and patient-reported outcomes. Some papers were excluded at this stage because of partial reporting of data.

### Synthesis

#### Characteristics of the included studies

All 15 papers used quantitative designs (Table 1). Five were published in the USA, five in Canada and one each in Australia, Germany, Israel, Italy and Turkey; a broad range of nationalities is therefore represented. Fourteen were cross-sectional and one included a 4-month follow-up. Sample sizes ranged from 51 to 400. Although we sought papers on any familial or romantic relationship with a patient with cancer, the emerging studies were primarily focused on caregiving relationships, of which most caregivers were those married to or in a romantic relationship with their caregiver. In eight studies, participants were individuals with cancer, in three, data were collected from the patient and their caregiver and in four, data were collected only from a caregiver (two were exclusively romantic partners, and two included other caregiving relationships, e.g. adult children and siblings). In the 14 studies on adult cancer patients or their carers, mean age ranged from 42.18 [standard deviation (*SD*) = 11.3] to 66 years (*SD* = 11.36). One retrospective study explored adult survivors of childhood cancer [37] at recruitment;

participants had a median age of 25 years (range 18–42), with a median age of onset of 8 (range 1–17) years.

Reporting of sample clinical characteristics and the relationship and parental status of participants was inconsistent. The majority of participants were married, cohabiting or in long-term relationships; three studies did not report on participant relationship status. In 10 studies, a romantic relationship was the focus; in one study, both parent–child and romantic relationships were explored; in one study, ‘a significant other’ was referred to; two studies focused on a caregiving relationship in which the caregiver was an unpaid relative or friend; one study reported on ‘global’ attachment. Four studies reported data on how many children participants had: the proportion with at least one child ranged from 71.4% to 91% across the studies.

For study inclusion, at least one of the dyad needed to have been diagnosed with cancer. Eight studies report the mean time since diagnosis; this ranges from 18 months to 4.5 years. Four studies related to specific cancers (melanoma, breast cancer, colorectal cancer and lung cancer), and the remainder recruited from a variety of diagnoses. Ten studies reported on the severity of cancer at time of recruitment; overall, participants include ‘early stage’, stages I, II, III and IV, end stage and those in remission.

### Data quality

Inter-rater reliability between quality assessments was high ( $\kappa$  range = 0.617–1.00). The overall mean score was 19.66 (*SD* = 3.51; see Table 1 for mean quality scores across the sample of papers). Three studies scored more

Table 1. Methodological overview of included studies

Authors (year)	Patients or caregivers	Country	n	Type of cancer	Severity	Timing	Relationship studied	Measure of attachment	Measure of adjustment	Quality score
42 Braun et al. (2012)	Both	Canada	110	Lung (24.5%), gastrointestinal (76.9%)	Stage III or IV	Mean = 24.2 months (range = 1–99) since diagnosis	Romantic	Experiences in Close Relationships [52]	Caring Questionnaire [38] Caring Burden Scale [39]	23
50 Cicero et al. (2009)	Patients	Italy	96	Breast (65%), colorectal (19%), other (16%)	Stage I (72%), Stage II or III (28%)	NR	Romantic	Relationship Scale Questionnaire [40]	The Multidimensional Scale of Perceived Social Support [41] Mental Adjustment to Cancer (MAC) [42]	19
43 Gauthier et al. (2012)	Patients	Canada	191	Variety of palliative care patients reporting cancer-related pain	'Advanced'	Mean = 39.1 months (SD = 42.6) since diagnosis	Significant other: spouse/partner 65.4%; other 29.8%	Experiences in Close Relationships [43]	Brief Pain Inventory [44] Charlston Comorbidity Index [45] Karnofsky Performance Status Scale [46] Pain Catastrophizing Scale [47] Multidimensional Pain Inventory [48]	24
49 Hamama-Raz & Solomon (2006)	Patients	Israel	300	Melanoma	Stage I (81.6%), Stage II (18.4%), no evidence of disease for 1–3 years (16.3%), up to 5 years (16.3%), more than 5 years (64.3%)	NR	Romantic	Experiences in Close Relationships [43]	Cognitive Appraisal of Health Scale [49] The Hardiness Scale [50] Hebrew [51] Inventory [52]	20
47 Hunter et al. (2006)	Patients	Australia	67	Digestive organs (24%), urinary organs (19%), respiratory (19%), melanoma (8%), head and neck (5%), breast (5%), blood and lymph (5%), brain/CNS (3%), bone (3%)	End stage	Mean = 25.95 months (SD = 28.14) since diagnosis	Romantic	The Relationship Questionnaire [53]	Positive and Negative Affect Schedule [54] Life events [55]	18
44 Joubert et al. (2001)	Patients	Canada	97	Reported type of malignancy: Solid 63%, non-solid 30%, CNS 6%	NR	Absence of malignancy for at least 5 years from diagnosis and at least 2 years since completion of treatment Mean = 2.1 years (SD = 0.6) since diagnosis	Romantic/ Parent-child	Attachment style questionnaire [56] The Relationship Questionnaire [53]	Life events [57] Cosmetic and functional sequelae of cancer [58]	14
37 Kim & Carver (2007)	Caregivers	USA	400	Prostate (25%), breast (23%), colorectal (13%),	NR	Mean = 2.1 years (SD = 0.6) since diagnosis	Romantic	Measure of Attachment Quality [59]	Care Tasks: Frequencies & Difficulties (developed for this study)	22

38	Kim et al. (2008)	Caregivers	USA	314	non-Hodgkin's lymphoma (11%), lung (9%), ovarian (5%), other (5%) Breast (25%), prostate (24%), colorectal (11%), non-Hodgkin's lymphoma (11%), Lung (9%) and other (5%)	NR	Mean = 2.2 years (SD = 0.6) since diagnosis	Romantic	Measure of Attachment Quality [59]	Reasons for providing care (developed for this study) Center for Epidemiological Studies Depression Scale [60] Benefit finding [61] Satisfaction with Life Scale [62] Severity of Cancer Index [63] Center for Epidemiological Studies Depression Scale [60]	23
39	Kim et al. (2007)	Caregivers	USA	162	Colon or rectal	Stage I (26.7%), Stage II (23.3%), Stage III (36.7%), Stage IV (11.7%)	2 months post-diagnosis	Caregiving (38% spouses, 26% adult offspring, 6% parents, 6% siblings, 13% friends)	Measure of Attachment Quality [59]	Center for Epidemiological Studies Depression Scale [60]	26
51	Kuscu et al. (2009)	Caregivers	Turkey	51	Colon and rectum (19.6%), lung (15.7%), breast (9.8%), lymphoma (9.8%), others (48.1%)	NR	NR	Romantic partner (37.3%), child (35.3%), sibling (13.7%), relative/friend (13.7%)	Adult Attachment Scale [64]	BDI [65] State-Trait Anxiety Inventory [66] Marmara Caregiver Assessment Interview in Oncology (developed for this study) Multidimensional Scale of Perceived Social Support [41]	16
45	McLean et al. (2011)	Both	Canada	46 couples	Various	End stage	NR	Romantic	Experiences in Close Relationships [43]	Marital Distress: Revised Dyadic Adjustment Scale [67] BDI-II [65]	19
40	Porter et al. (2012)	Both	USA	127 patients	Lung	Early stage	Mean = 18.4 months (SD = 28.5) since diagnosis	Romantic	Modified Experiences in Close Relationships [43] (removed questions referring to loss)	Beck Hopelessness Scale [68] Functional Assessment of Cancer Therapy [69] Brief Pain Inventory [44] BDI [70] State-Trait Anxiety Inventory [66] Quality of Marriage Index [71] Modified Standard Self-Efficacy Scale [72] POMS [73]	16
46	Rodin et al. (2007)	Patients	Canada	326	Colon or appendix (33.4%), rectal or anal canal (9.5%), pancreas (8.6%), liver, gallbladder or biliary ducts (10.1%), stomach or oesophageal (4.6%), lung (33.7%)	All Stage IIIA, Stage IIIB or Stage IV	Mean = 1.7 (SD = 2.1) years since diagnosis	Romantic	Experiences in Close Relationships [43]	Carer Strain Index [74] Short Orientation Memory Concentration Test [75] BDI [65] Memorial Symptom Assessment Scale [76]	20

(Continues)

Table 1. (Continued)

Authors (year)	Patients or caregivers	Country	n	Type of cancer	Severity	Timing	Relationship studied	Measure of attachment	Measure of adjustment	Quality score
41 Schmidt et al. (2011)	Patients	USA	54	Breast 46.3%, prostate 18.5%, other 33.2%	Remission	Mean = 4.5 years (SD = 2.8) since diagnosis	Romantic	Measure of Attachment Quality [59]	Post-traumatic Growth Inventory [77] Brief COPE Inventory [78] Medical Outcomes Study Social Support Survey [76]	15
48 Schmidt et al. (2002)	Patients	Germany	54	Breast	NR	Post-surgery	Global attachment	Adult Attachment Prototype Rating [79]		12

BDI, Beck Depression Inventory; NR, Not reported; POMS, Profile of Mood States.

than one SD below the mean, thus classifying them as 'low' in scientific merit [80,37,81]. These were primarily characterised by having poorly specified predictor and outcome measures, a narrow description of the sample, and insufficiently described analyses, as well as seemingly unsubstantiated conclusions. Only six studies provided estimates of effect size, and only eight studies were assessed as having a sufficiently powered sample size for the analyses undertaken or the study aims. The highest scoring paper was a longitudinal design [82]; other high-scoring studies were characterised by having well-described samples, clearly specified aims and hypotheses and clearly reported results. Across the sample, seven different measures of attachment were used, which made synthesis difficult. The Experiences in Close Relationships Scale (ECR) [43] (six studies) and the Measure of Attachment Quality [59] (four studies) were most commonly used.

## Narrative synthesis of findings

### Reported attachment styles

Adulthood romantic attachment style can be measured in two ways: either as a categorisation [53,83] into secure and insecure attachment styles or a continuous score [84] describing dimensions of attachment, for example, anxious and avoidant attachment. There is debate concerning which method is most valid for measurement of adult attachment [40,85], which is problematic when comparing findings between studies.

Of the patient-based studies, two categorised attachment styles. For both breast cancer [81] and melanoma patients [86], around 40% of participants were categorised as securely attached. This is slightly lower than expected when compared with normative samples [87] but higher than a comparison sample of diabetes patients where only 30% were classified as secure [88].

Fourteen studies reported attachment according to the dimensions of avoidance (working model of other) and anxiety (working model of self) but used a variety of different measures in doing so (Table 1). This is problematic as it makes these papers difficult to compare and synthesise. Mean scores were not reported by Hamama-Raz et al. [86], Schmidt [80] or McLean et al. [89]. Cicero et al. [90] measured avoidance and anxiety in Italian cancer patients using the Relationship Scales Questionnaire [40]. Although normative data are not available, reported means do not substantially differ from other published uses of this scale [91].

Participants with metastatic cancer [92], gastrointestinal or lung cancer [93], and outpatient survivors [94], were comparable with a community sample [95] with respect to their attachment when measured by the ECR [43]. When compared with data from a community sample [95], lung cancer patients were found to be less anxious and less avoidant [96]. The same study [96] also found older patients

reported lower levels of anxious attachment, and patients who were undergoing chemotherapy reported higher levels of avoidant attachment than patients who were not.

Joubert *et al.* [37] used the Relationship Questionnaire [53] to measure four subscales relating to secure, dismissing, preoccupied and fearful attachment in adult survivors of childhood cancer who were not currently reporting ongoing psychological or physical cancer-related consequences. This sample scored higher than comparable norms [97] for security of attachment and lower than norms on insecure dimensions of preoccupied, dismissing and fearful. This paper [37] also reported on five dimensions of attachment (confidence, discomfort, relationships as secondary, need for approval and preoccupation) using the Attachment Style Questionnaire [7]. Distribution of scores using this scale was in line with expectations, but we are unable to find any other published papers presenting comparable population means.

#### **The role of attachment in psychosocial outcomes for cancer patients**

Studies included in this review considered a range of psychosocial outcomes in relation to attachment, which may be loosely grouped into (a) studies on psychological adjustment and (b) studies on accessing and perceiving social support.

*The role of attachment in psychological adjustment to cancer:* Within these six papers, psychological adjustment was explored in terms of depression, well-being and distress: overall, more secure attachment was associated with better adjustment. Hamama-Raz *et al.* [86] categorised individuals according to attachment style and reported significant between-group differences. Specifically, those with secure attachment scored optimally, being highest for well-being and lowest for distress; fearfully attached individuals scored least optimally, being highest on distress and lowest on well-being.

It was typically reported that more avoidant and more anxious attachment were associated with poorer psychosocial outcome. The anxiety dimension was consistently associated with depression [98], higher anxiety and lower levels of social well-being [96]. Using the Adjustment to Cancer Scale [42], Cicero *et al.* [90] found that higher anxious attachment was associated with lower fighting spirit and higher hopelessness/helplessness and anxious preoccupation. Avoidant attachment was associated with poorer marital quality, poor perceived quality of life and higher levels of depression and trait anxiety [96]. Higher scores for both anxiety and avoidance were significantly associated with poorer well-being and higher cancer-related distress [86]. Using multivariate analysis, Hamama-Raz and Soloman [86] found that attachment explained more variance in well-being than did hardiness, threat, challenge or

subjective ability to cope, further demonstrating the unique role that attachment plays in explaining cancer-related adjustment.

Anxious attachment also has a role in the reaction to disease burden, possibly due to its role in our emotional regulation. Higher scores on anxious attachment are related to an increase in depression in response to disease burden [92]. Avoidant attachment is characterised by downplaying of emotional difficulties, and this is supported here as lower avoidance is associated with a lower score for depression regardless of disease burden [92].

Conversely, secure attachment was associated with positive outcomes such as post-traumatic growth, active coping and positive reframing in adult cancer survivors (in remission) [80]. In regression analysis, secure attachment accounted for a significant proportion of variance in post-traumatic growth after controlling for demographics (age, gender, marital status and education) and disease (months since diagnosis and type of cancer). Coping significantly mediated the association between secure attachment and post-traumatic growth.

*The patient's perceptions of caregiver behaviour:* Four studies explored the association between attachment and perceived caregiver behaviour. Attachment has explained differences in accessing and perceiving social support: insecurely attached individuals are less likely to elicit social support and less likely to see social interactions as helpful and supportive [99]. For example, more anxious attachment in patients was associated with the perception of negative reactions from others in response to their pain [94]. Higher attachment anxiety was associated with lower perceived social support [90], and higher attachment anxiety and avoidance predicted lower perceived emotional support [98]. Attachment dimensions predicted emotional support when other variables (physical condition, time since diagnosis, age, life events and socio-economic status) did not, further evidencing the unique contribution of attachment in cancer-related adjustment [98].

Pain catastrophising may be a way of patients conveying distress and eliciting support. It is characterised by pain vigilance and excessive focus on the negative implications. Engaging in pain catastrophisation was significantly associated with more anxious and avoidant attachment [94]. Therefore, expectations of caregiver behaviour, informed by the attachment system, influenced pain catastrophising behaviours. Although these findings are consistent with expectations for anxious attachment, avoidant attachment is characterised by stoic independence and a downplaying of symptoms, and so, this association is unusual.

Mediating roles for social support-related variables were investigated in two studies. First, the effects of attachment anxiety and avoidance on negative affect/mood were mediated by emotional support (as well as having a direct effect) [98]. Second, emotional, informational, tangible and affectionate

support mediated the association between attachment avoidance and depression and partially mediated the association between attachment anxiety and depression [92]. This was interpreted as those with insecure attachment were less likely to elicit and perceive social support, and this may then lead to increased depression.

### The impact of childhood cancer on adulthood attachment

One study focused specifically on the impact of the physical sequelae of childhood cancer on adult attachment. This retrospective study [37] found that adult survivors of childhood cancers with more severe functional sequelae (e.g. hearing impairment and reduced limb usage) reported less secure attachment. They found no such significant association with cosmetic sequelae (e.g. multiple scars and alopecia). Time of onset of functional deficits was significantly associated with attachment in relationships with parents and romantic partners. Further analysis showed that development of functional deficits in adulthood (as opposed to childhood or adolescence) was associated with less secure scoring on 'relationships as secondary' subscale of the Attachment Style Questionnaire (this dimension refers to preference towards basing self-worth on achievements rather than relationships, reflective of avoidant attachment style). Data presented also imply this is not a function of time passage since cancer onset but rather patient age at diagnosis [37]. Although findings from retrospective studies should be interpreted with caution, support is found elsewhere [98], where attachment security was not associated with time since diagnosis. Together, these findings suggest that security of attachment is independent of duration of ill health and any negative events that have co-occurred but may be adversely affected by illness occurring at a critical time in one's life, such as adolescence.

### Adjustment of caregivers

Five studies reported data from caregivers, and three reported data from both caregivers and patients. Across the studies, caregivers were spouses, adult children, siblings or other relatives. The measurement of attachment, scoring method or reporting was inconsistent between the reviewed papers. For example, Hunter *et al.* [98] and McLean *et al.* [89] failed to report mean scores for attachment subscales, Kuscu *et al.* [100] did not score the subscales conventionally as recommended by the authors and Kim and colleagues merged scores on two subscales (desire for merger and fear of abandonment) to create an anxiety subscale [101], therefore preventing comparisons with normative data. In this sample of studies, the attachment of caregivers is slightly more secure [101,96,100] than a normative group [59,95], if not highly similar [102,101,82,93].

Avoidant attachment is associated with lower marital quality, higher caregiver strain, anger [96] and lower life satisfaction [82] in spousal caregivers and depression in

both spousal caregivers [101,96] and in other family caregivers [100]. Anxious attachment is associated with higher anxiety across all caregivers [96,100] and with less benefit finding, poorer life satisfaction and higher depression in spousal caregivers [101,82]. Secure attachment was not correlated with anxiety [100] but was associated with increased benefit finding, higher life satisfaction and lower depression [101,82]. Together, these studies suggest that securely attached spouse and family caregivers tend to report better well-being and lower levels of depression [82,100] and insecure attachment is associated with poor psychosocial adjustment.

Caregiving stress has impact on poor caregiver adjustment and also predicts less satisfactory caregiving. In married couples, insecure attachment was associated with caregiving stress and depression at 2 months post-diagnosis and depression at 6 months post-diagnosis [101]. Age of caregiver had a significant moderating effect: younger caregivers with high levels of anxious attachment to the patient were more likely to report higher levels of stress and depression. For older caregivers, anxious attachment may offer a protective buffer against negative psychosocial adjustment.

In spouse caregivers, a more avoidant attachment style was associated with difficulties in the provision of emotional, instrumental and tangible support and with the frequency of providing tangible support [102]. Similar findings were observed for the anxious attachment style and difficulty with providing care [102]. An inverse association was observed between secure attachment and difficulty with providing care, indicating that those with a secure attachment perceive less difficulty with providing care [102]. For female caregivers (wives), greater security was associated with the more frequent provision of emotional care, and more anxious attachment was associated with providing tangible care. For male caregivers (husbands), greater avoidance was associated with less frequent emotional care, and those with more anxious attachment provided less frequent medical care.

Attachment explains motivation for caregiving in married couples. According to Deci and Ryan's [103] caregiving categories, it was found that attachment security correlated positively with autonomous reasons for care (i.e. behaving in a way that is congruous to one's own values and in line with perceived expectations of society), whereas attachment anxiety correlated positively with introjected reasons for care (i.e. acting to feel like a worthy person) [101]. Avoidant attachment correlated significantly with less autonomous reasons for care in wives but not husband caregivers. The association between security and depression is mediated by autonomous caregiving in husband caregivers [101]. This means that attachment security offered a protective buffer against the caregiver developing depression through their provision of care.

Three studies [96,93,89] collected data from both patients and their spouse caregivers and provide data on the



interplay between attachment styles and outcomes for these couples. Patients with lung cancer reported more pain and poorer functional well-being when spouses were more avoidant in their attachment [96]. Having a more anxiously attached spouse was associated with poorer perceived marital quality by the patient. No significant association was observed between patient attachment and spouse adjustment in this study.

Using scores from the ECR [43], married couples were classified into four groups according to whether they were both secure, both insecure, the patient only was insecure or the spouse only was insecure [96]. The method of grouping participants took those scoring in the top 25% on each scale to be insecure. This method is, therefore, sample specific and would be difficult to replicate. When both partners were secure, the patients and spouses reported better adjustment than when both were insecure; for those with only one of the dyad being secure, the adjustment scores fell somewhere in between. Regarding patient outcomes, significant differences between groups were observed for self-efficacy, marital quality, depression, anxiety, functional well-being, social well-being and pain. For spouse adjustment, significant differences were observed for marital quality, anger, vigour and caregiver strain.

Insecure attachment heightens marital distress for spouse carers of end-stage cancer patients; this is especially the case where there is a male patient with a female caregiver [89]. Higher avoidant attachment in a female patient was not associated with any change in the marital distress experienced by the male caregiver. However, where a male patient reported more avoidant attachment, the female caregivers reported more distress. This is possibly due to the effect of the independent nature of avoidant attachment and the need for the patient to maintain their personal power and autonomy.

Braun *et al.* [93] reported on the predictors of caregiving style in spouses caring for patients with metastatic cancer. Most of the studies reviewed failed to take into consideration the severity of the cancer as a confounding factor. This study used a proxy measure for the severity of the cancer, which was perceived caregiving burden. Of the four caregiving styles in Kuncze and Shaver's [38] model of caregiving, higher caregiving proximity (comfort with physical closeness during support provision) and more sensitive caregiving (attuned responsiveness to the partner's needs) were associated with less avoidant attachment in the caregiver. A more controlling caregiving style that is defined as a domineering style of caregiving that lacks sufficient respect for partner's own problem-solving and decision-making processes was associated with a more avoidant and more anxious attachment orientation in the caregiver. The reported attachment of the patient only predicted one of the four caregiving styles: compulsive caregiving. This is described as a tendency

to be over-involved and overprotective. This type of caregiving was associated with more anxious attachment in the caregiver and more avoidant but less anxious attachment in the patient.

## Discussion

The number of empirical studies of attachment and adjustment to cancer diagnosis identified in this review was small (15). All were quantitative designs, but otherwise heterogeneous, with a variety of research questions and methodologies. All showed relationships between dimensional measures or styles of attachment and variables of adjustment. This lends support to the suggestion that attachment may be a useful theoretical framework for understanding variance in adjustment and outcomes in cancer patients and their caregivers. Although our aim was to explore the role of attachment in wider familial relationships, none emerged, and the resulting literature was primarily focussed on relationships with caregivers and within that role, on spouse caregivers. There is therefore a gap in the literature exploring the role of attachment in adjustment to diagnosis for the children, siblings and parents of cancer patients. The possibility of publication bias is acknowledged.

These data suggest little difference in attachment between cancer survivors and population norms, but the use of different attachment measures makes comparison between papers, and therefore different samples, difficult. Nonetheless, these papers suggest that despite the challenges and stressors inherent in diagnosis and treatment, this experience does not change (for either better or worse) patients' attachment styles. This conclusion is, however, limited by the paucity of longitudinal data: only one longitudinal study [82] met inclusion criteria.

Little empirical work has explored the longer-term effects of attachment style in this population: only two studies were identified that explored medium to long-term cancer impact. One retrospective study exploring the impact of cancer and its sequelae on later attachment style [37] scored very low on scientific quality and thus necessitates cautious interpretation of the findings. The other [82] presented longitudinal data on depression and stress in caregivers at 2 and 6 months post-diagnosis but did not report changes in these outcome variables. This gap in the literature presents an opportunity to conduct longitudinal studies to demonstrate more powerfully how attachment influences patients' and their families' adjustment to the life events that cancer presents, such as follow-up appointments, screening and coping with the fear of recurrence.

Research on the relationship between attachment style and well-being suggests that insecure attachment is most commonly associated with poorer adjustment and that attachment security may provide a protective buffer during stress through post-traumatic growth or coping [80,92].

In this review, securely attached individuals were more likely to use positive coping strategies and recognise growth. Evidence for this adaptive mechanism is consistent with theory [104] and wider literature [18–20]. Neither patients nor caregivers with insecure but dismissive–avoidant attachment styles reported poorer well-being and distress than those reporting secure attachment [102,92,86]; those with an insecure–anxious attachment style, however, reported poorer outcomes [92]. Where both the patient and their spouse had insecure attachment, this predicted the poorest outcome; secure attachment in both was optimal for positive adjustment [96]. Those with more insecure attachment were more likely to catastrophise pain experiences [94], those with more anxious attachment saw their partner's response to their pain as punishing and less avoidant patients considered their partner's response more positively. This supports the theory that those with anxious attachment exacerbate their difficulties through symptom hypervigilance and being unable to notice support, whereas those with an avoidant style downplay the effects of their illness on their life and mood [98].

Consistent with theory, these studies show that attachment style is related to individual perceptions of and ways of providing and accessing social support; this may consequently impact upon adjustment. For those with a secure attachment style, social support may offer a protective buffer against depressive mood. Belief that one is unworthy of care underpins an anxious attachment style; in caregivers, this is marked by over-involvement, compulsiveness and a tendency to be controlling [64]. Those who are overly emotionally intense in this way or withdrawn (as is characteristic of an avoidant attachment style) have difficulty in finding benefit from an emotionally supportive relationship. The type of professional support offered to these individuals may, therefore, need to be tailored to these individual differences in attachment in order to maximise positive effects and reduce negative affect. For those with dismissing or avoidant attachment, it is important that their own sense of individuality and independence is maintained. For those with a more highly anxious style of attachment, support should be predictable and clearly delineated.

There is evidence of sex differences in the way attachment influences how a spouse caregiver perceives and responds to the patient. Therefore, an intervention would need to take the sex of the individual into consideration. For example, caregiver wives were more distressed when the patient husband had an avoidant attachment style, which may be perceived as rejecting [89]. This was not the case for caregiver husbands, where greater distress was not reported in response to a patient showing avoidant attachment.

### Methodological issues

All included studies were quantitative, which is consistent with the larger body of attachment research, with one

exception [82]: they were also all cross-sectional and relied exclusively on self-reported attachment style. It is acknowledged that the studies reviewed represented a wide variation in staging of cancer; this made synthesis difficult but had the advantage of demonstrating the application of attachment theory across a broad spectrum of experiences. The range of relationships that has been studied is also limited, emphasising spousal or romantic and, to a lesser extent, parental relationships. Each of these limitations may be understood in terms of the resources involved in undertaking psychosocial oncology research that is longitudinal or seeks dyadic data. Measurement of attachment and reporting of illness statistics were inconsistent between studies and reflected the need for a multidisciplinary approach on those studies where data were not reported fully. Future research should consider exploring the role of attachment in family adjustment to cancer, how the changing roles of family members may be altered and how best to support the family as a whole. We would recommend the use of a standard measure of attachment, to allow for comparison and synthesis of findings. We advocate the ECR [43] for future research; it is consistent with theory, most commonly used in this field of enquiry and affords the calculation of dimensional scores and the categorisation of attachment style.

### Implications

This sparse and diverse literature gives a coherent message consistent with the position that attachment style may help in understanding variability in adjustment and outcomes in cancer patients and those close to them, supporting the case for further research. Although the research in cancer has, to date, focused on partners and parents, attachment style could have wider implications for the well-being of patients and for the quality of interactions with health care professionals and other family members (e.g. siblings and grandparents). Attachment style has the potential to explain apparent inconsistencies and anomalies in research into support and well-being because it determines how support is sought, used and perceived. However, inclusion of attachment as a variable has implications for sample size in order to ensure sufficient numbers of respondents with different attachment styles. Furthermore, current attachment measures are often lengthy and so have implications for participant burden in already sensitive research areas.

The existing evidence supports the case for a role for attachment in the well-being of cancer patients. It is interesting to note that a randomised control trial has shown the effectiveness of a couples' intervention informed by attachment theory [105]. This review has suggested gender differences, which might inform such couples' interventions in the future. Further application of the findings from this review is less straightforward because of the paucity of respected

and empirically supported therapeutic approaches that work directly with insecure attachment. An awareness of attachment theory and the ways in which different forms of insecure attachment impact on caregiving and well-being may, however, help those working with cancer patients and their families to better understand and provide for their needs. The development and evaluation of supportive care inter-

ventions tailored to different attachment styles remains a longer-term goal.

### Acknowledgements

Thanks to Sally Smith and Rhian McHugh for assisting with the second screening of abstracts.

### References

- Brennan J. Adjustment to cancer – coping or personal transition? *Psycho-Oncology* 2001;**10**:1–18.
- Mitchell A, Kaar S, Coggan C, Herdman J. Acceptability of common screening methods used to detect distress and related mood disorders – preferences of cancer specialists and non-specialists. *Psycho-Oncology* 2008;**17**:226–236.
- Soler-Vila H, Kasl SV, Jones BA. Prognostic significance of psychosocial factors in African-American and White breast cancer patients. *Cancer* 2003;**98**:1299–1308.
- Bloom J, Stewart S, Johnston M, Banks P, Fobair P. Sources of support and the physical and mental well-being of young women with breast cancer. *Soc Sci Med* 2001;**53**:1513–1524.
- Holland KD, Holahan CK. The relation of social support and coping to positive adaptation to breast cancer. *Psychol Health* 2003;**18**:15–29.
- Amir M, Ramati A. Posttraumatic symptoms, emotional distress, and quality of life in long-term survivors of breast cancer: a preliminary research. *Anxiet Disord* 2002;**16**:191–206.
- Schnoll RA, Knowles JC, Harlow L. Correlates of adjustment among cancer survivors. *J Psychosoc Oncol* 2002;**20**(1):37–59.
- Wyatt G, Friedman LL. Long-term female cancer survivors: quality of life issues and clinical implication. *Cancer Nurs* 1996;**19**(1):1–7.
- Watson E, Rose P, Neal R *et al*. Personalised cancer follow-up: risk stratification, needs assessment or both? *Br J Cancer* 2012;**106**:1–5.
- Kim Y, Schulz R, Carver C. Benefit finding in the cancer caregiving experience. *Psychosom Med* 2007;**69**:283–291.
- Nijboer C, Triemstra M, Tempelaar R, Sanderman R, van den Bos G. Determinants of caregiving experiences and mental health of partners of cancer patients. *Cancer* 1999;**86**:577–588.
- Bowlby J. *Attachment and Loss. Volume 1: Attachment* (2nd edn). Pimlico: London, 1969.
- Bowlby J. *Attachment and Loss. Volume 2: Separation, Anxiety and Anger* (2nd edn). Pimlico: London, 1973.
- Bowlby J. *Attachment and Loss. Volume 3: Loss* (2nd edn). Pimlico: London, 1980.
- Bifulco A, Moran P, Ball C, Lillie A. Adult attachment style II: its relationship to psychosocial depressive-vulnerability. *Soc Psychiatry Psychiatr Epidemiol* 2002;**37**:60–67.
- Bifulco A, Moran P, Ball C, Benazzri O. Adult attachment style I: its relationship to clinical depression. *Soc Psychiatry Psychiatr Epidemiol* 2002;**37**:50–59.
- Simonelli LE, Ray WJ, Pincus AL. Attachment models and their relationships with anxiety, worry, and depression. *Counsel Clin Psychol J* 2004;**1**:107–118.
- Bohachick P, Taylor MV, Sereika S, Reeder S, Anton BB. Social support, personal control, and psychosocial recovery following heart transplantation. *Clin Nurs Res* 2002;**11**(1):34–51.
- Cozzarelli C, Sumer N, Major B. Mental models of attachment and coping with abortion. *J Pers Soc Psychol* 1998;**74**:453–467.
- Brennan KA, Shaver PR, Tobey AE. Attachment styles, gender, and parental problem drinking. *J Soc Pers Relat* 1991;**8**:451–466.
- Maunder RG, Hunter JJ. Attachment and psychosomatic medicine: developmental contributions to stress and disease. *Psychosom Med* 2001;**63**:556–567.
- Fraley RC, Shaver PR. Airport separations: a naturalistic study of adult attachment dynamics in separating couples. *J Pers Soc Psychol* 1998;**75**(5):1198–1212.
- Mikulincer M, Florian V. Appraisal and coping with a real-life stressful situation: the contribution of attachment styles. *Pers Soc Psychol B* 1995;**21**:408–416.
- Hazan C, Shaver P. Attachment as an organizational framework for research on close relationships. *Psychol Inq* 1994;**5**:1–22.
- Mikulincer M, Shaver PR, Gillath O, Nitzberg RA. Attachment, caregiving, and altruism: boosting attachment security increases compassion and helping. *J Pers Soc Psychol* 2005;**89**:817–839.
- Carnelley KB, Pietromonaco PR, Jaffe K. Attachment, caregiving, and relationship functioning in couples: effects of self and partner. *Pers Relat* 1996;**3**:257–278.
- Feeney BC, Collins NL. Predictors of caregiving in adult intimate relationships: an attachment theoretical perspective. *J Pers Soc Psychol* 2001;**80**:972–994.
- Kunce LJ, Shaver PR. An attachment-theoretical approach to caregiving in romantic relationships. In *Advances in Personal Relationships*, Bartholomew K, Perlman D (eds.), Kingsley: London, 1994; 205–237.
- Carpenter BD. Attachment bonds between adult daughters and their older mothers: associations with contemporary caregiving. *J Gerontol B Psychol Sci Soc Sci* 2001;**56**:257–266.
- Besser A, Priel B. The apple does not fall far from the tree: attachment styles and personality vulnerabilities to depression in three generations of women. *Pers Soc Psychol Bull* 2005;**31**:1052–1073.
- Carnelley KB, Pietromonaco PR, Jaffe K. Depression, working models of others, and relationship functioning. *J Pers Soc Psychol* 1994;**66**:127–240.
- Magai C, Cohen CI. Attachment style and emotion regulation in dementia patients and their relation to caregiver burden. *J Gerontol B Psychol Sci Soc Sci* 1998;**53**:147–154.
- Higgins J, Green S. *Cochrane Handbook for Systematic Reviews of Interventions*. Wiley & Sons Ltd: Oxford, 2009.
- Khan K, ter Riet G, Glanville J, Sowden A, Kleijnen J. *Undertaking Systematic Reviews of Research on Effectiveness. CRDs Guidance for Those Carrying out or Commissioning Reviews*. Report Number 4 (2nd edn). Centre for Reviews and Dissemination: York, 2001.
- Petticrew M, Roberts H. *Systematic Reviews in the Social Sciences: A Practical Guide*. Wiley-Blackwell Ltd: Oxford, 2005.
- Kmet LM, Lee RC, Cook LS. *Standard Quality Assessment Criteria for Evaluation Primary Research Papers from a Variety of Fields*. HTA Initiative #13. Alberta Heritage Foundation for Medical Research: Alberta, 2004.
- Joubert D, Sadeghi R, Elliott M, Delvins GM, Lapperriere N, Rodin G. Physical sequelae and self-perceived attachment in adult survivors of childhood cancer. *Psycho-Oncology* 2001;**10**:284–292.
- Kunce LJ, Shaver PR. An attachment-theoretical approach to caregiving in romantic relationships. In *Attachment Processes in Adulthood. Advances in Personal Relationships*, vol. 5, Bartholomew K, Perlman D (eds.), Jessica Kingsley Publishers: London, 1994; 205–237.
- Carey PJ, Oberst MT, McCubbin MA, Hughes SH. Appraisal and caregiving burden in family members caring for patients receiving chemotherapy. *Oncol Nurs Forum* 1991;**18**(8):1341–1348.
- Griffin DW, Bartholomew K. Models of the self and other: fundamental dimensions underlying measures of adult attachment. *J Pers Soc Psychol* 1994;**67**(3):430–445.
- Zimet GD, Dahlemet NW, Zimet S, Farley GK. The multidimensional scale of perceived social support. *J Pers Assess* 1988;**52**(1):30–41.
- Watson M, Greer S, Young J, Inayat Q, Burgess C, Robertson B. Development of a questionnaire

- measure of adjustment to cancer: the MAC scale. *Psychol Med* 1988;**18**:203–209.
43. Brennan KA, Clark CL, Shaver PR. Self report measurement of adult attachment: an integrative overview. In *Attachment Theory and Close Relationships*, Simpson JA, Rholes WS (eds.), Guilford Press: New York, 1998; 46–76.
  44. Cleeland CS, Ryan KM. Pain assessment: global use of the Brief Pain Inventory. *Ann Acad Med Singapore* 1994;**23**:129–138.
  45. Charlson ME, Pompei P, Ales KL, MacKenzie CR. A new method of classifying prognostic comorbidity in longitudinal studies: development and validation. *J Chronic Dis* 1987;**40**:373–383.
  46. Karnofsky DA, Burchenal JH. The clinical evaluation of chemotherapeutic agents in cancer. In *Evaluation of Chemotherapeutic Agents*, Macleod CM (ed.), Columbia University Press: New York, NY, 1949; 191–205.
  47. Sullivan MJL, Bishop SR, Pivik J. The Pain Catastrophizing Scale: development and validation. *Psychol Assess* 1995;**7**:524–532.
  48. Kerns RD, Turk DC, Rudy TE. The West Haven-Yale Multi-dimensional Pain Inventory (WHYMPI). *Pain* 1985;**23**:345–356.
  49. Kessler TA. The Cognitive Appraisal of Health Scale: development and psychometric evaluation. *Res Nurs Health* 1998;**21**:73–82.
  50. Kobasa SC. Stressful life events, personality, and health: Inquiry into the hardiness. *J Pers Soc Psychol* 1979;**37**:1–11.
  51. Florian V, Drory Y. The Mental Health Inventory: psychometric characteristics and normative data from Israeli population. *Psychologia* 1990;**2**:26–35.
  52. Veit CT, Ware JE. The structure of psychological stress and well-being in general populations. *J Consult Clin Psychol* 1983;**51**:730–742.
  53. Bartholomew K, Horowitz LM. Attachment styles among young adults: a test of a four-category model. *J Pers Soc Psychol* 1991;**61**:226–244.
  54. Watson D, Clark LA. *Manual for the Positive and Negative Affect Schedule Expanded Form*. The University of Iowa: Iowa, 1994.
  55. Brugha T, Bebbington P, Tennant C, Hurry J. The list of threatening experiences: a subset of 12 life event categories with considerable long-term contextual threat. *Psychol Med* 1985;**15**:189–194.
  56. Feeney JA, Noller P, Hanrahan M. Assessing adult attachment. In *Attachment in Adults: Clinical and Developmental Perspectives*, Sperling MB, Berman WH (eds.), Guilford Press: New York, 1994; 128–152.
  57. Costello CG, Devins GM. Two-stage screening for stressful life events and chronic difficulties. *Can J Behav Sci* 1988;**20**:85–92.
  58. Mulhern RK, Wasserman AL, Friedman AG, Fairclough D. Social competence and behavioral adjustment of children who are long-term survivors of cancer. *Pediatrics* 1989;**83**:18–25.
  59. Carver CS. Adult attachment and personality: converging evidence and a new measure. *Pers Soc Psychol Bull* 1997;**23**:865–883.
  60. Radloff LS. The CES-D scale: a self-report depression scale for research in the general population. *Appl Psychol Meas* 1977;**1**:385–401.
  61. Antoni MH, Lehman JM, Kilbourn KM et al. Cognitive-behavioral stress management intervention decreases the prevalence of depression and enhances benefit finding among women under treatment for early-stage breast cancer. *Health Psychol* 2001;**20**:20–32.
  62. Diener E, Emmons RA, Larsen RJ, Griffin S. The satisfaction with the life scale. *J Pers Assess* 1985;**49**:71–75.
  63. Kim Y, Baker F, Spillers RL. Cancer caregivers quality of life: Effects of gender, relationship and appraisal. *J Pain Symptom Manage* 2007;**34**:294–304.
  64. Collins NL, Feeney BC. A safe haven: support-seeking and caregiving processes in intimate relationships. *J Pers Soc Psychol* 2000;**78**:1053–1073.
  65. Beck AT, Steer RA, Brown GK. *Manual for the Beck Depression Inventory II*. Psychological Corporation: San Antonio, TX, 1996.
  66. Spielberger CD, Gorsuch RC, Lushene RE, Vagg PR, Jacobs GA. *Manual for the State Trait Anxiety Inventory*. Consulting Psychologists Press: Palo Alto, CA, 1983.
  67. Busby DH, Crane DR, Christensen C. A revision of the Dyadic Adjustment Scale for use with distressed and non-distressed couples: construct hierarchy and multidimensional scales. *J Marital Fam Ther* 1995;**21**:289–308.
  68. Beck AT, Weissman A, Lester D, Trexler L. The measurement of pessimism: the Hopelessness Scale. *J Consult Clin Psychol* 1974;**42**:861–865.
  69. Cella DF, Bonomi AE, Lloyd SR, Tulsy DS, Kaplan E, Bonomi P. Reliability and validity of the Functional Assessment of Cancer Therapy-Lung (FACT-L) quality of life instrument. *Lung Cancer* 1995;**12**:199–220.
  70. Beck AT, Beamesderfer A. Assessment of depression: the York depression inventory. *Mod Probl Pharmacopsychiatry* 1974;**7**:151–169.
  71. Norton R. Measuring marital quality: A critical look at the dependent variable. *J Marriage Fam* 1983;**45**:141–151.
  72. Lorig K, Chastain RL, Ung E, Shoor S, Holman HR. Development and evaluation of a scale to measure perceived self-efficacy in people with arthritis. *Arthritis Rheum* 1989;**32**:37–44.
  73. Lorr M, McNair D. *Profile of Mood States-B*. Educational and Industrial Testing Service: San Diego, 1982.
  74. Robinson BC. Validation of a caregiver strain index. *J Gerontol* 1983;**38**:344–348.
  75. Katzman R, Brown T, Fuld P, Peck A, Schechter R, Schimmel H. Validation of a short Orientation-Memory-Concentration Test of cognitive impairment. *Am J Psychiatry* 1983;**140**:734–739.
  76. Sherbourne CD, Stewart AL. The MOS Social Support Survey. *Soc Sci Med* 1991;**32**:705–714.
  77. Tedeschi R, Calhoun L. The Posttraumatic Growth Inventory: measuring the positive legacy of trauma. *J Trauma Stress* 1996;**9**:455–471.
  78. Carver C. You want to measure coping but your protocol's too long: consider the brief COPE. *Int J Behav Med* 1997;**4**:92–100.
  79. Strauss B, Lobo-Drost A, Pilkonis PA. Einschätzung von Bindungsstilen bei Erwachsenen-erste Erfahrungen mit der deutschen Version einer Prototypenbeurteilung (Assessment of attachment styles in adults—first results of the German version of the Adult Attachment Prototype Rating). *Z Klin Psychol Psychiatr Psychother* 1999;**47**:347–364.
  80. Schmidt SD, Blank TO, Bellizzi KM, Park CL. The relationship of coping strategies, social support, and attachment style with posttraumatic growth in cancer survivors. *J Health Psychol* 2012;**17**:1033–1040.
  81. Schmidt S, Nachtigall C, Wuethrich-Martone O, Strauss B. Attachment and coping with chronic disease. *J Psychosom Res* 2002;**53**:763–773.
  82. Kim Y, Kashy D, Evans T. Age and attachment style impact stress and depressive symptoms among caregivers: a prospective investigation. *J Cancer Surviv* 2007;**1**:35–43.
  83. Hazan C, Shaver PR. Romantic love conceptualised as an attachment process. *J Pers Soc Psychol* 1987;**52**(3):511–524.
  84. Collins NL, Read SJ. Adult attachment, working models, and relationship quality in dating couples. *J Pers Soc Psychol* 1990;**58**(4):644–663.
  85. Fraley RC, Waller NG. Adult attachment patterns: a test of the typological model. In *Attachment Theory and Close Relationships*, Simpson JA, Rholes WS (eds.), Guilford Press: New York, 1998; 77–114.
  86. Hamama-Raz Y, Solomon Z. Psychological adjustment of melanoma survivors. *J Indiv Differ* 2006;**27**(3):172–182.
  87. Stein H, Koontz AD, Fonagy P et al. Adult attachment: what are the underlying dimensions? *Psychol Psychother* 2002;**75**(1):77–91.
  88. Ciechanowski PS, Katon WJ, Russo JE, Walker EA. The patient-provider relationship attachment theory and adherence to treatment in diabetes. *Am J Psychiatry* 2001;**158**:29–35.
  89. McLean LM, Walton T, Matthew A, Jones JM. Examination of couples' attachment security in relation to depression and hopelessness in maritally distressed patients facing end-stage cancer and their spouse caregivers: a buffer or facilitator of psychosocial distress? *Support Care Cancer* 2011;**19**:1539–1548.
  90. Cicero V, Lo Coco G, Gullo S, Lo Verso G. The role of attachment dimensions and perceived social support in predicting adjustment to cancer. *Psycho-Oncology* 2009;**18**:1045–1052.
  91. Kurdek L. On being insecure about the assessment of attachment styles. *J Soc Pers Relat* 2002;**19**:811–834.
  92. Rodin G, Walsh A, Zimmermann C et al. The contribution of attachment security and social support to depressive symptoms in

- patients with metastatic cancer. *Psycho-Oncology* 2007;**16**:1080–1091.
93. Braun M, Hales S, Gilad L, Mikulincer M, Rydall A, Rodin G. Caregiving styles and attachment orientations in couples facing advanced cancer. *Psycho-Oncology* 2012;**21**:935–943.
  94. Gauthier LR, Rodin G, Zimmerman C *et al*. The communal coping model and cancer pain: the roles of catastrophizing and attachment style. *J Pain* 2012;**13**:1258–1268.
  95. Chopik WJ, Edelman RS, Fraley RC. From the cradle to the grave: age differences in attachment from early adulthood to old age. *J Pers* 2013;**81**:171–183.
  96. Porter LS, Keefe FJ, Davis D, Rumble M, Scipio C, Garst J. Attachment styles in patients with lung cancer and their spouses: associations with patient and spouse adjustment. *Support Care Cancer* 2012;**20**:2459–2466.
  97. Schmidt DP, Alcalay L, Allensworth M *et al*. Patterns and universals of adult romantic attachment across 62 cultural regions: are models of self and of other pancultural constructs? *J Cross Cult Psychol* 2004;**35**:367–402.
  98. Hunter MJ, Davis PJ, Tunstall JR. The influence of attachment and emotional support in end-stage cancer. *Psycho-Oncology* 2006;**15**:431–444.
  99. Vogel DL, Wei M. Adult attachment and help-seeking intent: the mediating roles of psychological distress and perceived social support. *J Couns Psychol* 2005;**52**(3):347–357.
  100. Kuscuk MK, Dural U, Onen P *et al*. The association between individual attachment patterns, the perceived social support, and the psychological wellbeing of Turkish informal caregivers. *Psycho-Oncology* 2009;**18**:927–935.
  101. Kim Y, Carver CS, Deci EL, Kasser T. Adult attachment and psychological well-being in cancer caregivers: the mediational role of spouses' motives for caregiving. *Health Psychol* 2008;**27**(2):S144–S154.
  102. Kim Y, Carver CS. Frequency and difficulty in caregiving among spouses of individuals with cancer: effects of adult attachment and gender. *Psycho-Oncology* 2007;**16**:714–723.
  103. Deci EL, Ryan RM. *Handbook of Self-Determination Research*. University of Rochester Press: Rochester, NY, 2002.
  104. Sloman L, Gilbert P, Hasey G. Evolved mechanisms in depression: the role and interaction of attachment and social rank in depression. *J Affect Disord* 2003;**74**:107–121.
  105. McLean LM, Walton T, Rodin G, Esplen MJ, Jones JM. A couple-based intervention for patients and caregivers facing end-stage cancer: outcomes of a randomized controlled trial. *Psycho-Oncology* 2013;**22**:28–38.

## Supporting information

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