



Do patients' perceptions of the quality of their relationships with
clinicians mediate relationships between attachment style and distress
in ocular melanoma patients?

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Dedication

To Nana, you continue to be an inspiration! Nöelle, your absolute love of life throughout a battle hard fought will never be forgotten.

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I would like to say a big thank you to the participants who have been so very kind in giving their time to take part in this research. I wish you all the very best for your treatment. Many thanks to the clinic team for being so welcoming, for giving me an insight into the demanding work and much needed service that they provide and for always finding me some desk-space. Many special thanks to those who gave their time to support the recruitment process. Thank you also to the research and administrative teams at the Doctorate of Clinical Psychology for all of your support.

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Table of Contents

Dedication.....	i
Acknowledgments.....	ii
Table of Contents.....	iii
List of Figures.....	vi
List of Tables.....	vii
List of Appendices.....	viii
Word count.....	ix
Thesis Overview.....	1
Chapter One: Systematic literature review.....	4
Abstract.....	5
Keywords.....	5
Introduction.....	6
Attachment theory.....	7
Objective.....	9
Method.....	9
Inclusion/exclusion criteria.....	10
Quality assessment.....	13
Synthesis.....	13
Results.....	14
Study characteristics.....	21
Participant characteristics.....	21
Methodological issues.....	22
To what extent does patient attachment style predict dissatisfaction with patient-physician relationships or distress in cancer patients?.....	24

What factors mediate or moderate the effects of attachment style on patient-physician relationships in cancer patients?.....	27
Discussion.....	29
Limitations.....	30
Clinical implications.....	32
Conclusion.....	33
References.....	34
Chapter Two: Empirical paper.....	44
Abstract.....	45
Keywords.....	45
Introduction.....	45
Attachment, clinical care-seeking and distress.....	47
Method.....	51
Participants.....	51
Design.....	53
Procedure.....	54
Measures.....	55
Covariates.....	57
Data analysis.....	58
Results.....	59
Correlational analysis.....	61
Mediational analysis.....	62
Discussion.....	64
Theoretical implications.....	65

Limitations.....	66
Clinical implications.....	68
Conclusion.....	69
References.....	70
Appendices.....	79

List of Figures

Chapter One: Systematic literature review

Figure 1 PRISMA Flow chart of selection process.....12

Chapter Two: Empirical paper

Figure 1. Diagram illustrating Bartholomew and Horowitz' (1991) dimensional model of attachment.....48

Figure 2. Participant flowchart.....52

Figure 3. Path diagram illustrating standardized regression β weights showing possible mediation of relationship between secure attachment and HADS anxiety by perceptions of consultant and nurse relationships.....63

Figure 4. Path diagram illustrating standardized regression β weights showing possible mediation of relationship between secure attachment and HADS depression by perceptions of consultant and nurse relationships.....63

List of Tables

Chapter One: Systematic literature review

Table 1 Study characteristics and findings.....15

Chapter Two: Empirical paper

Table 1 Sample characteristics.....53

Table 2 Means and SDs of study variables.....60

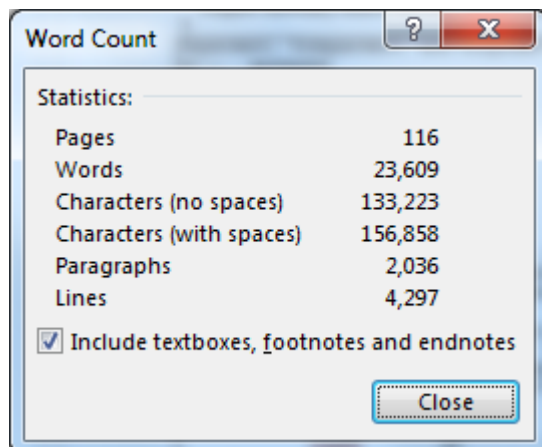
Table 3 Pearson product moment correlation coefficients between study variables.....61

Table 4 Bootstrap results for indirect effects.....64

List of Appendices

Appendix A ‘Health Psychology Review’ instructions for authors.....	79
Appendix B Psychology and Health’ instructions for authors.....	82
Appendix C Quality assessment of included studies.....	85
Appendix D Doctorate of Clinical Psychology Research Review Committee Approval.....	86
Appendix E University Sponsorship Approval Letter.....	87
Appendix F Research Ethics Committee Approval letter.....	89
Appendix G Trust Approval letter.....	91
Appendix H Participant information sheet.....	93
Appendix I Consent form.....	98
Appendix J Fritz and MacKinnon (2007) Empirical estimates of sample sizes needed for .8 power.....	100
Appendix K Oneway ANOVA HADS anxiety and HADS depression and questions about professional support and attachment styles by education.....	101
Appendix L Breakdown of treatments.....	103
Appendix M Output Summary HADS anxiety, secure attachment and perceptions of clinical relationships.....	104
Appendix N Output Summary HADS depression, secure attachment and perceptions of clinical relationships.....	105

Word count



Thesis Overview

This thesis examines whether links between attachment and lower distress are mediated by ocular melanoma (OM) patients' perceptions of the quality of their relationships with consultants and nurses. The thesis comprises two papers; a systematic literature review and an empirical paper.

OM is a rare eye cancer which is initially treatable, however approximately 50% of patients develop metastatic disease (Kujala, Kivelä, & Mäkitie, 2003). Thus, adjusting to OM presents challenges and uncertainties for patients concerning treatment and prognosis (Hope-Stone, Brown, Heimann, Damato, & Salmon, 2015), and OM patients show high levels of distress one year after initial diagnosis (Brandberg et al., 2000).

Many oncology patients report ongoing distress (Cassileth, et al., 1986; Zabora, BrintzenhofeSzoc, Curbow, Hooker, & Piantadosi, 2001). Past studies in physical and mental health settings have established a link between attachment style and patients' perceptions of their relationships with clinicians. Patients who perceived clinical relationships less positively were more vulnerable to distress (Ciechanowski, et al., 2001; Smith, Msetfi, & Golding, 2010), and less favourable medical and well-being outcomes (Ciechanowski, et al., 2001; 2004). It is important that clinicians receive support to understand, identify and manage difficulties related to attachment that may impact upon clinical relationships and possibly increase patient distress. To this end, exploring how attachment processes influence clinical relationships and wellbeing in oncology settings would inform the development of interventions.

Chapter one is a systematic literature review which examines the extent to which attachment style predicts oncology patients' perceptions of the quality of clinical relationships between themselves and clinicians and their distress, and factors that mediate or moderate these relationships.

The review outlines the theoretical basis for the relationship between attachment theory, patient perceptions of clinical relationships and wellbeing in oncology care and the rationale for the review. The findings from the nine quantitative studies that were systematically identified are quality assessed and reviewed. The findings are discussed in detail together with implications for future research and clinical practice. Links between attachment style, patient perceptions of clinical relationships and distress were identified, consistent with research from other healthcare areas (Ciechanowski, et al., 2001; 2004; Smith et al., 2010)

Chapter two is an empirical paper which, in line with research in other healthcare populations, describes a study exploring whether OM patients' attachment styles influence their ability to benefit from clinical relationships during diagnosis and treatment, and thus experience reduced distress. The findings are discussed in relation to existing literature, together with clinical implications.

This thesis has been prepared for Health Psychology Review and Psychology and Health, as these journals are aimed at clinical and health psychologists working in healthcare.

References

- Brandberg, Y., Kock, E., Oskar, K., Af Trampe, E., Seregard, S. (2000). Psychological reactions and quality of life in patients with posterior uveal melanoma treated with ruthenium plaque therapy or enucleation: a one year follow-up study. *Eye, 14*, 839-846.
- Cassileth, B. R., Lusk, E. J., Brown, L. L., Cross, P. A., Walsh, W. P., & Hurwitz, S. (1986). Factors associated with psychological distress in cancer patients. *Medical and Pediatric Oncology, 14*(5), 251-254. doi: 10.1002/mpo.2950140503
- Ciechanowski, P. S., Katon, W. J., Russo, J. E., & Walker, E. A. (2001). The patient-provider relationship: Attachment theory and adherence to treatment in diabetes. *American Journal of Psychiatry, 158*(1), 29-35.

- Ciechanowski, P., Russo, J., Katon, W., Von Korff, M., Ludman, E., Lin, E., . . . Bush, T. (2004). Influence of patient attachment style on self-care and outcomes in diabetes. *Psychosomatic Medicine, 66*(5), 720-728.
- Hope-Stone, L., Brown, S. L., Heimann, H., Damato, B., & Salmon, P. (2015). How do patients with uveal melanoma experience and manage uncertainty? A qualitative study. *Psycho-Oncology, 24*(11), 1485-1491.
- Kujala, E., Mäkitie, T., & Kivelä, T. (2003). Very long-term prognosis of patients with malignant uveal melanoma. *Investigative ophthalmology & visual science, 44*(11), 4651-4659.
- Smith, A. E., Msetfi, R. M., & Golding, L. (2010). Client self-rated adult attachment patterns and the therapeutic alliance: A systematic review. *Clinical Psychology Review, 30*(3), 326-337.
- Zabora, J., BrintzenhofeSzoc, K., Curbow, B., Hooker, C., & Piantadosi, S. (2001). The prevalence of psychological distress by cancer site. *Psycho-Oncology, 10*(1), 19-28.

Chapter 1: Systematic Literature Review

Relationships between attachment style, distress and clinical relationships
in oncology settings: A systematic narrative literature review

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(Appendix A)

Abstract

Cancer diagnosis, treatment and prognosis is challenging to patients. Coping with stress is in part an interpersonal process, and patients' capacities to form relationships with clinicians can influence their well-being. This systematic narrative review aims to understand how patient attachment style might predict dissatisfaction with clinical relationships and distress in cancer patients, and factors that mediate or moderate the effects of attachment style on these relationships. Four databases were systematically searched for relevant empirical papers published between 1969 and 2015, yielding nine studies which were quality assessed and reviewed. A narrative approach was used to synthesise the findings. The majority of studies employed cross-sectional or prospective survey designs, and focussed on several conceptualisations of attachment and clinical relationships. Mostly cross-sectional links were identified between attachment style and poorer patient perceptions of clinical relationships and distress, but these do not allow cause to be tested. Some evidence suggested that lower trust mediated relationships between insecure attachment and distress, but stronger evidence was found that trust moderated relationships between attachment style and perceptions of clinical relationships and distress. Further research using prospective designs and testing mediation will explain the relationships between attachment style and distress and their mechanisms.

Keywords: attachment theory; oncology; clinical relationship; clinical communication; distress

Introduction

Some 605 people per 100,000 of the United Kingdom population were diagnosed with cancer in 2013 (“Cancer Statistics UK,” 2015) and it is estimated that there are approximately two million survivors residing in the UK (Maddams et al., 2009). Adapting to a diagnosis of cancer presents emotional and practical challenges to patients, therefore many cancer patients report ongoing distress (Cassileth, et al., 1986; Zabora, BrintzenhofeSzoc, Curbow, Hooker, & Piantadosi, 2001). Patients frequently find diagnoses and prognoses challenging and are required to make decisions regarding treatments with uncertain outcomes (Seetharamu, Iqbal & Weiner, 2007).

One mitigator of distress for cancer patients is their perceived quality of their relationships with clinicians in terms of openness, support and trustworthiness (Salmon & Young, 2005). Attachment theory (Bowlby, 1969: 1988) explains how people form attachments and how this influences their relationships with significant others. According to attachment theorists, clinical relationships are based in patient vulnerability and patients must engage effectively with healthcare providers in order to obtain optimal care (Ciechanowski, Katon, Russo, & Walker, 2001; Maunder et al., 2006). Past studies in physical and mental health care have found that patients with insecure attachment styles perceive clinical relationships less favourably (Ciechanowski, et al., 2001; Smith, Msetfi, & Golding, 2010), they benefit less from clinical relationships and are vulnerable to experiencing a negative impact on well-being (Ciechanowski, et al., 2001) and inferior medical outcomes (Ciechanowski et al., 2004). Qualitative work suggests that oncology patients’ capacities to form positive attachments to clinical staff facilitate their adaptation to cancer diagnoses and treatment (Burkitt-Wright, Holcombe & Salmon, 2004; Lilliehorn, Hamburg, Kero & Salander, 2001; Salander & Henriksson, 2005). This review examines quantitative work to identify and test these qualitative propositions.

Attachment theory

When applied to adult attachments, attachment theory deals with two separate, but often interchangeably used constructs; schemas, the longstanding expectations that people possess about relationships, and cross-situational thoughts and feelings about relationships that are influenced by these schemas (Brennan, Clark & Shaver, 1988). Bowlby (1969; 1988) posited that infants' evolutionary needs for safety, security and comfort create needs to attach to caregivers when threatened. The nature of caregivers' responses give rise to the psychological incorporation of these early relationship experiences into schematic representations, or 'internal working models', comprising perceptions and expectations about how one will be treated by significant others across the lifespan, which become significant at times of vulnerability (Hazan & Shaver, 1994; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000).

According to Bartholomew and Horowitz' (1991) model, which defines four prototypic styles of attachment; securely attached individuals possess a positive model of self and others, perceive that they are loveable and worthy of care and expect that those close to them can provide comfort, safety and protection when needed. Insecure attachment styles reflect negative perceptions of the self and/or other. Within insecure attachment, preoccupied attachment entails a perception of the self as unworthy or unloveable ('anxious attachment'), and the expectation that others will be rejecting. Dismissing and fearful attachment styles are characterised by negative perceptions of others' trustworthiness, and thus are considered to be located in the 'avoidant' dimension of attachment (Bartholomew & Horowitz, 1991). These schemas are the basis for consistent patterns of behaviour. Preoccupied individuals strive for self-acceptance by

striving for the acceptance of others and relationships may be over-involved, while avoidant individuals avoid dependence on others (Mikulincer, Shaver & Pereg, 2003).

The term attachment style is used to denote cross-situational consistencies in attachment, but is often loosely used to also refer to the cognitions and behaviours that they cause such as fear or avoidance. When physical or psychological stressors activate the attachment system, individuals who are securely attached are more resilient to stress because positive perceptions and expectations of self and of others allow them to seek and accept care (Mikulincer et al., 2003).

Oncology patients may be particularly vulnerable in their clinical relationships due to the life-threatening nature of the disease (Hunter & Maunder, 2009). Qualitative research suggests that feelings of attachment to clinicians and medical systems provide comfort and allow people to cope with cancer through beliefs that they are cared for and that clinicians will assist them to obtain the best outcomes (Hope-Stone, Brown, Heimann, Damato, & Salmon, 2015; Lilliehorn et al., 2010). In other areas of healthcare, non-secure attachment styles lead to maladaptive coping strategies, such as denial or avoidance to protect the sense of self (Ciechanowski & Katon, 2006; Mikulincer et al., 2003).

Patients' trust in clinicians may be an important mediator of the relationship between attachment style and both clinical relationships and distress. Diabetes patients with fearful and dismissing attachment styles report lower levels of trust in the health care system and struggle to collaborate with clinicians (Ciechanowski & Katon, 2006). Qualitative research with cancer patients describes the importance of their feeling that their physician values them as a human being and that it is safe to trust in their physician to provide the care that they need (Burkitt-Wright et al., 2004; McWilliam, Brown & Stewart, 2000; Salander, & Henriksson, 2005;). In addition, qualitative research has

found that patients' perceptions of being acknowledged as a person, of being treated empathically, of being afforded autonomy and respect, and of a good working alliance can increase patient satisfaction with the clinical relationship (Burkitt-Wright et al., 2004; Isaksson, Salander, Granström, & Laurell, 2014; McWilliam et al., 2000;).

Objective

The objective of this paper is to critically examine whether attachment is associated with distress and clinical relationships in oncology settings and to understand how any association may be mediated or moderated. Understanding how attachment processes influence clinical relationships and wellbeing can inform the development of interventions that could help clinicians to identify and deal with attachment issues that may compromise clinical relationships and potentially increase patient distress. There is some empirical research regarding attachment relationships between cancer patients and clinicians, but this research has not yet been systematically and critically reviewed.

The review aims to answer the following questions:

- (1) To what extent does patient attachment style predict dissatisfaction with clinical relationships or distress in cancer patients?
- (2) What factors mediate or moderate the effects of attachment style on clinical relationships and distress in cancer patients?

Method

This paper systematically reviewed available literature regarding clinical attachment relationships between patients and clinicians in cancer care.

To ensure that the search was exhaustive and included literature from a broad range of disciplines: CINAHL (nursing); MEDLINE (medicine and healthcare); PubMed (medicine and healthcare) and PsycINFO (psychology) databases were chosen. The

Cochrane database was also searched. SIGLE was searched for unpublished literature, together with the reference lists of articles identified as suitable for review. The search field included all available fields (title, abstract, keywords and MeSH terms). Scoping searches were carried out initially to identify search terms reflecting the wide variety of terminology used clinically and in research to describe the population, attachment and clinical relationships and advice was sought from researchers with experience in the field. Terms used were: “attachment” NOT “genetics” AND “neoplasms” [mesh] OR “cancer” OR “oncology” AND “nurses” OR “doctors” OR “clinical” OR “physician patient” OR health care workers” AND “relationships” OR “working alliance” OR “trust.” As Bowlby published seminal attachment theory work in 1969, the search was limited to papers published between 1969 and 2016. Initial searches took place in July 2015 and the search was updated in February 2016. No previous systematic reviews on this topic were found during the search.

Searches were combined and duplicates removed prior to papers being screened in relation to the predetermined inclusion and exclusion criteria at title and abstract level. The appropriateness for inclusion of screened papers was cross-checked with a second reviewer. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Moher, Liberati, Tetzlaff & Altman, 2009) checklist was used to guide reporting of the systematic review process.

Inclusion/exclusion criteria

Inclusion criteria were: a.) studies including human patients aged 18 years or more, with a diagnosis of cancer only, b.) studies that included a measure of patient attachment style, or constructs related to attachment style, together with outcomes related

to patient satisfaction with the clinical relationship and/or related psychosocial outcome variables such as anxiety, depression and quality of life; c.) papers written in English.

After removing duplicates, titles and abstracts of 119 papers were examined and 106 were excluded. The 13 papers remaining were reviewed and 9 studies were deemed suitable for inclusion following discussion with a second researcher. Any differences were discussed in relation to the full text of the paper until agreement was reached and reasons for exclusion were recorded, and documented in the PRISMA flowchart (Figure 1).

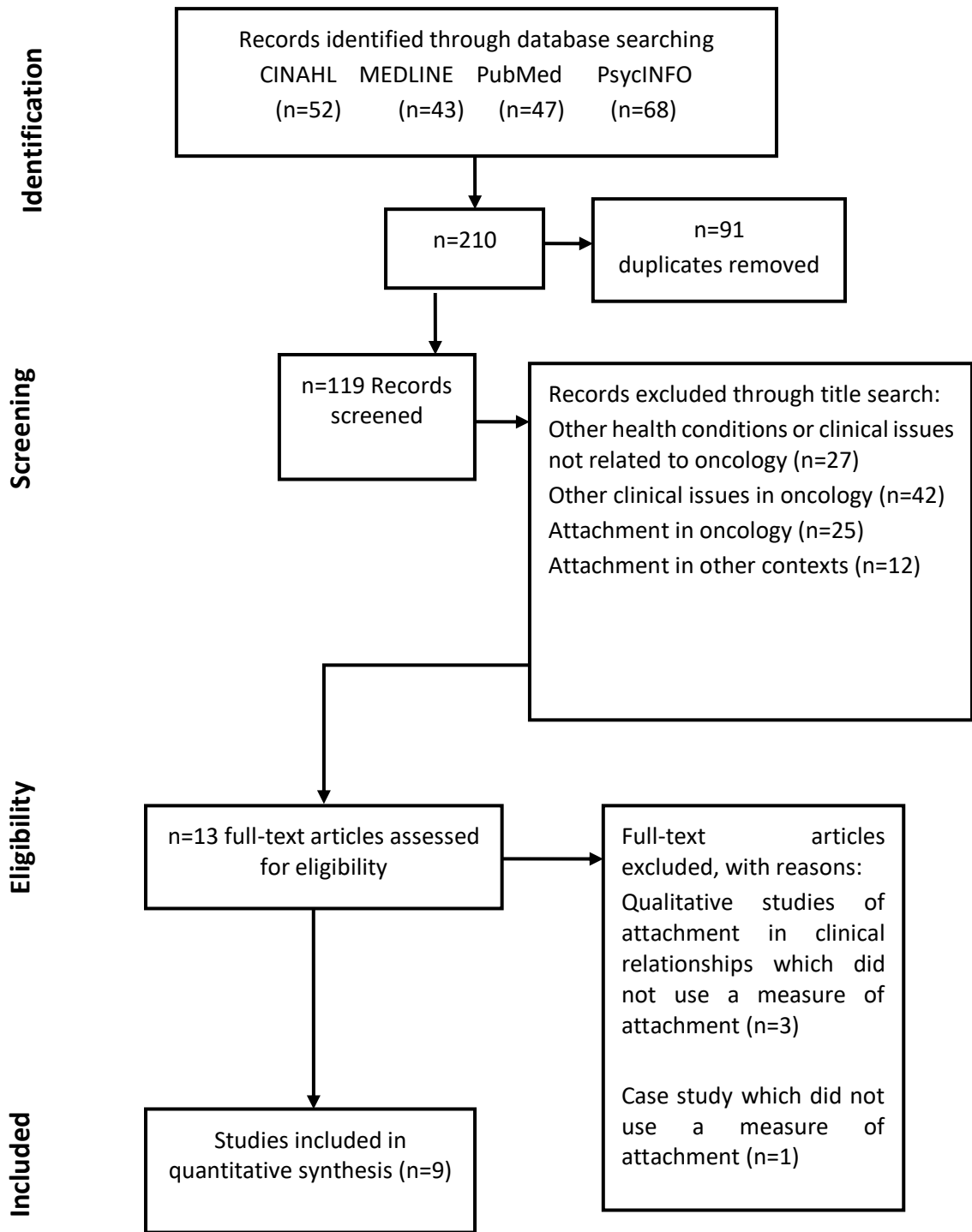


Figure 1. PRISMA Flow chart of selection process

Quality assessment

Articles were assessed against the checklist criteria developed from the Critical Appraisal Skills Programme (CASP) (2013) Checklist for Cohort Studies (Appendix C), in order to guide the consideration of study design and internal and external validity. A sample of five papers were cross-checked with a second researcher using blind rating. The agreement rate was 94%.

Seven studies did not report the method by which potential participants were selected (Calvo, Palmieri, Marinelli, Bianco, & Kleinbub, 2014; Harding, Beesley, Holcombe, Fisher, & Salmon, 2015; Hillen et al., 2015; Hinnen et al., 2014; Holwerda et al., 2013; Pegman, Beesley, Holcombe, Mendick, & Salmon, 2011; Porcerelli, Bornstein, Porcerelli, & Arterbery, 2015), thus it was difficult to ascertain whether the samples are representative of the target population. Harding et al. (2015); Hillen et al. (2014) and Holwerda et al. (2013) reported undertaking a power analysis, and it was ascertained that these studies were adequately powered. Power analysis was not reported by other studies. Calvo et al. (2014), Hillen et al. (2014) and Porcerelli et al. (2015) did not report the participation rate of selected individuals thus it was difficult to see whether low recruitment rates are a cause for concern. Participation rates were above 70% in the Brédart et al. (2015); Clark et al. (2011); Harding et al. (2015) and Pegman et al. (2011) studies. Hinnen et al. (2014) reported a 22% participation rate and Holwerda et al. (2013) reported a 30% participation rate, and findings may be affected by recruiting biases.

Synthesis

Study designs were dissimilar in terms of their aims and measures used, thus, neither meta-analysis nor simple vote counting analyses could not be performed. Narrative analysis was chosen in order to accommodate specific findings of individual studies whilst exploring common and contradictory findings through study comparisons. Analysis was conducted at

the level of reported findings rather than authors' conclusions, and different conclusions from the authors were sometimes drawn. The final narrative arose through discussion between the author and the primary supervisor.

Results

Data extracted was corroborated by a second researcher. A sample of three papers were reviewed. Any disagreements were discussed until agreement was reached. The characteristics and findings of the reviewed studies are summarised in Table 1.

Table 1

Study characteristics and findings

Study reference	Aims	Sample and characteristics	Design and Analysis	Measures	Outcome
Brédart et al., 2015. (France).	To assess whether survivors' information needs 8 months after treatment were related to attachment style.	N=414 (100% female) Mean age =55.8 (SD=12.4) Participation rate: 66% Diagnosis: Breast cancer Stage: 58.2% I; 41.8% II Treatment: Mastectomy 57%; chemotherapy 44.2%; endocrine 71.7% Months since diagnosis Mean=7.2 (SD)=2.7 Source: 1 hospital	Prospective survey study over 8 months.	<u>Outcome measures:</u> -Health system and information needs subscale of the 34-item Supportive Care Needs Survey (SCNS-SF34) (Boyes, Girgis, & Lecathelinais, 2009) (T1 and T2) <u>Predictors:</u> -Experiences in Close Relationships Inventory (Brennan et al., 1988). <u>Covariates</u> -Rosenberg Self-Esteem Scale (Rosenberg, 1989). -14-item Hospital Anxiety and Depression scale (HADS) (Zigmond & Snaith, 1983) (T1 and T2) -French-Canadian version of the Medical Communication Competence Patient Scale (MCCS) (Cegala, Coleman, & Turner, 1998). -Doctors' subscale of the European Organisation for Research and Treatment of Cancer in-patient satisfaction with care questionnaire (EORTC IN-PATSAT32) (Brédart et al., 2005). -Age, Education level, Professional status' Relationship status, Children/no children, Stage, Treatment	- 'Anxious' attachment (Mean=3.0); 'avoidant' attachment (Mean= 3.2) -Attachment style at time-point 1 did not predict Information Needs at time-point 2.
Calvo et al., 2014. (Italy).	To assess the relationship between attachment styles,	N=37 patients (46% female; 54% male) Mean age =66.04 (SD=5.12)	Cross-sectional survey.	<u>Outcome measures:</u> -The Working Alliance Inventory-Short Form (WAI-S) (Horvath & Greenberg, 1989).	-27% secure; 35.1% dismissing-avoidant; 21.6% preoccupied; 16.2% fearful -Patient attachment style was associated with perceptions of

patient-caregiver reciprocal empathy and patient-physician working alliance.

Participation rate: N/R

Diagnosis: Various cancers

Stage: End-stage

Time since diagnosis: N/R

Source: 1 hospice.

-The Perception of Partner Empathy Questionnaire (PPE) from the Revised Barrett-Lennard Relationship Inventory (Barrett-Lennard, 1986).

Independent variable:

-The Relationship Questionnaire (RQ) (Bartholomew & Horowitz, 1991). Patients and caregivers.

‘General alliance’ (F(3,33)=56.74, $p<.001$), ‘goal alliance’ (F(3,33)=40.23, $p<.001$), ‘task alliance’ (F(3,33)=32.25, $p<.001$), and ‘bond alliance’ (F(3,33)=47.40, $p<.001$) subscales.

Clark et al., 2011. (UK).

To test whether attachment mediates between patient-perceptions of incomplete support, surgeon-perceived difficulty and childhood abuse.

N=100 (100% female)

Mean age=57.6 (SD=10.0)

Participation rate:77%

Diagnosis: Breast cancer

Stage: <3

Treatment: 72% wide local excision; 28% mastectomy and radiotherapy with endocrine treatment

Time since diagnosis: N/R

Source: 1 unit.

Cross-sectional survey.

Outcome measure:

-Self-report questions (Hill, Murray, Woodall, Parmar & Hentges, 2004) modified for breast cancer patients (Salmon et al., 2006).

Predictors:

-Self-report questions (Drossman et al., 1990).

-Relationship Questionnaire (RQ) (Bartholomew & Horowitz, 1991) & Relationship Scales Questionnaire (RSQ) (Griffin & Bartholomew, 1994).

- Difficult Doctor-Patient Relationship Questionnaire (DDPRQ-10) (Hahn et al., 1996)

Covariates:

- General Health Questionnaire-12 (GHQ-12) (Goldberg et al., 1997); Parental Bonding Instrument (Parker, Tupling & Brown, 1979); Prognosis; Age

-Abused patients ‘self’ (Mean=-2.25; SD=3.4); ‘other’ (Mean=-3.09; SD=5.15)

-Non-abused patients ‘self’ (Mean=0.59; SD=3.16); ‘other’ (Mean=0.82; SD=3.80)

-Patients reporting abuse were 7.1 times more likely to perceive incomplete support (95% CI ranged from 2.24-22.68; $p<.001$).

Harding et al., 2015. (UK).	To identify whether attachment predicts perceptions of higher support from nurses.	<p>N=153 (100% female)</p> <p>Mean age=60.6 (SD=8.6)</p> <p>Participation rate: 85%</p> <p>Diagnosis: Breast cancer</p> <p>Stage: Stage: <3</p> <p>Treatment: Wide local excision or mastectomy.</p> <p>Time since diagnosis: 1-3 years</p> <p>Source: 1 unit.</p>	Cross-sectional survey.	<p><u>Outcome measures:</u></p> <p>-Perceived Professional Support Questionnaire (PPSQ) (Hill et al., 2004).</p> <p>-The Working Alliance Inventory-Short Form (WAI-S) (Tracey & Kokotovic, 1989).</p> <p><u>Predictors:</u></p> <p>-Relationship Questionnaire (RQ) (Bartholomew & Horowitz, 1991) and Relationship Scales Questionnaire (RSQ) (Griffin & Bartholomew, 1994)</p> <p><u>Covariates:</u></p> <p>-Distress as measured by General Health Questionnaire-12 (GHQ-12) (Goldberg et al., 1997); Age.</p>	<p>-‘Self’ and ‘other’ values not reported</p> <p>-Only a positive model of ‘self’ predicted feeling supported by nurses in multivariate analyses with an odds ratio (OR) of 1.15 (95% CI ranged from 1.02-1.3; $p < 0.05$).</p> <p>-Model of ‘self’ was the only significant predictor of patient-nurse alliance in univariate with an OR of 1.19 (95% CI ranged from 1.04-1.37; $p < 0.01$).</p>
Hillen et al., 2014. (Netherlands).	To identify relationship between attachment style, health locus of control and trust in their oncologist.	<p>N=345 survivors ≥ 18 years (52% female; 48% male)</p> <p>Participation rate: Not described</p> <p>Mdn age= 63 (SD=11)</p> <p>Diagnosis: Various cancers.</p> <p>Stage: N/R</p> <p>Treatment: N/R</p> <p>Time since diagnosis:</p>	Controlled clinical trial using video vignettes of patient-oncologist interaction.	<p><u>Outcome variables:</u></p> <p>-Trust in Oncologist Scale (TiOS) (Hillen et al., 2012).</p> <p><u>Predictors:</u></p> <p>-Experiences in Close Relationships short form (ECR-sf) (Wei, Russell, Mallinckrodt, & Vogel, 2007).</p> <p>-Multidimensional Health Locus of Control (HLOC) Scales (Wallston, Wallston, & DeVellis, 1978).</p> <p><u>Covariates:</u></p> <p>Age; Gender; Education; Ethnicity</p>	<p>-Attachment anxiety (Mean=2.72; SD=0.95); Attachment avoidance (Mean=2.86; SD=1.10).</p> <p>- Attachment avoidance and attachment anxiety were not independently predictive of trust in the observed oncologist.</p> <p>-Patients’ attachment avoidance moderated the effect of oncologist’s communication of caring ($b = .11$, $SE = .05$; $p < .044$) and honesty on patients’ trust ($b = -.13$, $SE = .05$; $p < .011$)</p> <p>-Higher attachment anxiety ($b = -.17$; $SE = .03$; $p < .001$) and avoidance ($b = -.09$; $SE = .03$; $p < .01$)</p>

		0-1 yr 12%; 1-2 yrs 18%; 2-5 yrs 31%; >5 yrs 39%			were associated with less trust in patients' own oncologist.
		Source: Patient organization and 2 hospitals.			
Hinnen et al., 2014. (Netherlands).	Whether anxious attachment moderates between lower levels of trust, emotional distress and increased physical limitations.	N=119 (71% female; 29% male) Mean age = 59 (SD =9.32) Participation rate: 22% Diagnosis: Prostate 27%; breast 61%; intestinal 7%; cervical 6% Stage: N/R Treatment: N/R Metatheses: 17% Time since diagnosis: 3-15 months Source: 3 hospitals	Prospective survey study over 15 months.	<u>Outcome variables:</u> -Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983). -Physical Functioning subscales of the European Organization for Research and Treatment of Cancer, Quality of Life Questionnaire-C30 (Aaronson et al., 1993) <u>Predictors:</u> -Experiences in Close Relationships Scale Revised (ECR-R) (Fraley, Waller & Brennan, 2000). -Wake Forest Physician Trust Scale (WF) (shortened version) (Hall et al., 2002). <u>Covariates:</u> Age; Cancer type; Gender; Comorbidity	-Attachment values not reported. -The interaction term of trust with attachment anxiety ($b=-5.99$, $SE=1.88$, $p<.01$) and of trust with attachment avoidance ($b=5.59$, $SE=1.66$, $p<.01$) explained 24% of the variance in distress at 3 months. -At 9 and at 15 months, the interaction term of trust with attachment anxiety ($b=-4.47$, $SE=1.83$, $p<.01$); ($b=-3.60$, $SE=1.48$, $p<.05$) explained 23% and 26% of the variance in distress respectively. - At 3 and 9 months, the interaction term of trust and attachment anxiety ($b=12.97$, $SE=4.42$, $p<.01$); ($b=10.77$, $SE=3.79$, $p<.01$) explained 28% and 14% of variance in physical limitations respectively. -Outcome variables not controlled at each time-point.
Holwerda et al., 2013.	To examine whether	N=130 (70% female;	Prospective study over 9 months.	<u>Outcome variables:</u>	-65% 'securely attached'; 35% 'insecurely attached'

(Netherlands).	patient trust mediates between attachment and satisfaction and attachment and distress.	<p>30% male)</p> <p>Mean age=58.8 (SD=9.4)</p> <p>Participation rate: 30%</p> <p>Diagnosis: Prostate 28.5%; breast 58.5%; intestinal 6.9%; cervical 15.4%</p> <p>Treatment: I: Chemotherapy 8.5%; radiotherapy 38.5%; hormonal 16.9%; Other 2.3%; no therapy 29.2%; missing 4.6%</p> <p>II: Chemotherapy 5.4%; radiotherapy 0; hormonal 23.0%; Other 10.8%; no therapy 53.0%; missing 7.7%</p> <p>Stage: N/R</p> <p>Metatheses: 6.9%</p> <p>Time since diagnosis: 3 months.</p> <p>Source: 3 hospitals.</p>	<p>-Attachment Style Interview (Bifulco, Moran, Ball, & Bernazzani, 2002).</p> <p><u>Predictors:</u></p> <p>-Wake Forest Physician Trust Scale (WF) (shortened) (Hall et al., 2002).</p> <p>-Patient Satisfaction Questionnaire (shortened) (Blanchard, Ruckdeschel, Fletcher, & Blanchard, 1986).</p> <p>-Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983).</p> <p><u>Covariates:</u></p> <p>Diagnosis; Gender; Age; Education; Treatment; Metatheses; Physical comorbidity.</p>	<p>-Trust mediated the relationship between insecure attachment and satisfaction at 3 and 9 months post-diagnosis ($b=-0.33$, $SE=0.16$, $p<.001$) 95% CI ranged from -0.73 to -0.07 and ($b=-0.44$, $SE =0.15$, $p<.001$) 95% CI ranged from 0.79 to -0.19 respectively.</p> <p>-Trust did not mediate the relationship between attachment style and distress.</p> <p>-Distress not controlled at time-point 1</p>
Pegman et al., 2011. (UK).	To examine the extent to which variability in	<p>N=133 (100% female)</p> <p>Mean age=58.9 (SD=10.9)</p>	<p><u>Outcome variable:</u></p> <p>-Working Alliance Inventory (WAI) (Horvath & Greenberg, 1989).</p>	<p>-N=47 securely attached; N=86 insecurely attached.</p> <p>-Secure attachment predicted stronger total alliance ($b =.29$,</p>

breast cancer patients' sense of relationship with surgeons was attributable to patient-surgeon variation and attachment style.

Participation rate:
90%

Diagnosis: Breast cancer

Stage: <3

Treatment:
Mastectomy or wide local excision

Time since diagnosis:
72% 2 weeks post-diagnosis

Source: 1 breast unit

Predictors:
-Relationship Questionnaire (RQ) (Bartholomew & Horowitz, 1991) and Relationship Scales Questionnaire (RSQ) (Griffin & Bartholomew, 1994)

Covariates:
-Depression measured by The Hospital Anxiety and Depression Questionnaire (HADS) (Zigmond & Snaith, 1983).

$p=.03$) and explained 5% of the variance in total alliance scores

Porcerelli et al., 2015. (USA).

To examine the relationship of dependency and detachment to health, distress and the doctor-patient relationship.

N=50 (64% female; 36% male)

Mean age=60.32 (SD=12.74)

Diagnosis:
Various cancers.

Time since diagnosis:
N/R

Treatment: Radiation and/or chemotherapy.

Stage:
16% I; 26% II; 28% III; 20% IV.

Source: 1 outpatient clinic.

Cross-sectional survey.

Study variables:
-Patient-Doctor Relationship Questionnaire (PDRQ-9) (Van der Feltz-Cornelis, Van Oppen, Van Marwijk, De Beurs, & Van Dyck, 2004).
-Medical Outcomes Study Short Form (SF-20) (Stewart, Hays and Ware, 1988).
-Patient Health Questionnaire-2 (PHQ-2) (Kroenke, Spitzer & Williams, 2001).
-Generalized Anxiety Disorder-2 (GAD-2) (Kroenke, Spitzer, Williams, Monahan & Löwe, 2007).
-Patient Health Questionnaire 15 (PHQ-15) (Kroenke, Spitzer & Williams, 2002).
-Relationship Profile test (RPT) (Bornstein & Languirand, 2003).

-RPT- 'Destructive Overdependence' (Mean=23.04; SD=6.66); RPT- 'Dysfunctional Detachment' (Mean=29.24; SD=7.45); RPT- 'Healthy Dependency' (Mean=34.84; SD=7.36)

-Higher RPT DO subscale scores were positively correlated with more negative scores for physician-patient relationship ($r(48)=-0.28$, $p<.05$) and higher anxiety ($r(48)=0.30$, $p<.005$)

Note. N/R=Not reported

Study characteristics

The nine studies included in the review contained data in relation to cancer patients' attachment style. One study measured 'dependency,' a multidimensional construct that, according to the authors, has subscales that show convergent validity with secure, anxious and avoidant attachment styles (Bornstein et al., 2003). Study characteristics and findings of the nine studies are synthesised in Table 1.

The studies were undertaken in the United Kingdom, United States, France, Italy, and the Netherlands and all were conducted within medical settings. Articles included consisted of five cross-sectional studies (Calvo et al., 2014; Clark et al., 2011; Harding et al., 2015; Pegman et al., 2011; Porcerelli et al., 2015), three prospective longitudinal studies (Brédart et al., 2015, Hinnen et al., 2014, Holwerda et al., 2013) and one controlled clinical trial (Hillen et al., 2014). Two studies, Hinnen et al. (2014) and Holwerda et al. (2013) were part of the same longitudinal study. Both were included as they contribute separate information to the review.

Participant characteristics

Four studies focused exclusively on breast cancer patients (Brédart et al., 2015; Clark et al., 2011; Harding et al., 2015; Pegman et al., 2011). Two cross-sectional studies took place within the time of initial diagnosis and treatment for primary breast cancer (Pegman et al., 2011; Clark et al., 2011). One cross-sectional study recruited participants up to three years post diagnosis and treatment for breast cancer (Harding et al., 2015).

Three prospective studies ran up to eight, nine and 15 months following initial diagnosis and treatment for various cancers (Brédart et al., 2015; Hinnen et al., 2014; Holwerda et al., 2013). Three studies did not report participants' stage of disease (Hillen et al., 2014; Hinnen et al., 2014; Holwerda et al., 2013). Five studies stated metastasis or cancer recurrence as criteria for exclusion (Brédart et al., 2015; Clark et al., 2011; Harding

et al., 2015; Hinnen, 2014; Holwerda, 2013; Pegman et al., 2011). Two studies included participants in later stages of disease; one focused on participants who had survived various cancers (Porcerelli et al., 2015) and one focused on end-stage patients with a variety of cancers (Calvo et al., 2014). Calvo et al. (2014), Hillen et al. (2014) and Hinnen et al. (2014) did not report treatments received by patients.

Studies predominantly focused on patients' experiences while one included surgeons' perceptions of difficulty forming a relationship with patients (Clark et al., 2011), two included patient and physicians' (Calvo et al., 2014) and patients' and consultants' perception of the working alliance (Pegman et al., 2011).

Methodological issues

Measures of attachment either describe attachment in terms of discrete categories, or a continuum. There is contention regarding which is most valid (Bartholomew & Shaver, 1998), and cross-study comparison is difficult. Two studies used categorical measures (Calvo et al., 2014; Holwerda et al., 2013), while six studies used continuous measures (Brédart et al., 2015; Clark et al., 2011; Harding et al., 2015; Hillen et al., 2014; Hinnen et al., 2014; Pegman et al., 2011). Porcerelli et al. (2015) used the Relationship Profile test (RPT) (Bornstein & Languirand, 2013), a self-report measure which demonstrates convergent validity with the Adult Attachment Scale (AAS) (Collins & Read, 1990), a categorical measure and was deemed valid with regards to the review question. Some studies classified participants into a single dimension of secure/insecure attachment (Holwerda et al., 2013; Pegman et al., 2011), whilst others (Brédart et al., 2015; Clark et al., 2011; Harding et al., 2015; Hillen et al., 2014; Hinnen et al., 2014; Holwerda et al., 2013) classified scores into a two dimensional model of attachment anxiety (negative 'self' model) and avoidance (negative 'other' model) (Ravitz, Maunder,

Hunter, Sthankiya & Lancee, 2010). All studies apart from two, reported adequate internal consistency for attachment measures (Clark et al., 2011; Pegman et al., 2011).

Studies measured patients' perceptions of clinical relationships differently. Three studies (Calvo et al., 2014; Harding et al., 2015; Pegman et al., 2011), used the Working Alliance Inventory (WAI) (Horvath & Greenberg, 1989), which measures perceived agreement on goals and tasks and perception of interpersonal bond. The scale was not developed for use in physical health populations, thus normative values were not available for comparison, however means were similar across the Calvo et al. (2014) and Pegman et al. (2011) studies. Harding et al. (2015) and Clark et al. (2011) used the Perceived Professional Support questionnaire (PPSQ) (Hill et al., 2014) which had been used previously in healthcare populations but lacked normative values. The PPSQ asks questions about perceived trustworthiness and perceptions of emotional and practical support. Brédart et al. (2015) assessed perceived information needs using the information needs subscale of the 34-item Supportive Care Needs Survey (SCNS-SF34) (Boyes et al., 2009). The scale was previously validated in breast cancer patients and means did not differ significantly across both studies (Brédart et al., 2012). Hillen et al. (2014) measured trust using the Trust in Oncologist Scale (TiOS) (Hillen et al., 2012) which had been previously validated for use in oncology populations (Hillen et al., 2012) and means were similar across both studies. Holwerda et al. (2013) and Hinnen et al. (2014) measured trust also, using the Wake Forest Physician Trust Scale (WF) (Hall et al., 2002), which was developed in other physical health populations but had not been used in oncology. The means reported by Holwerda et al. (2013) were similar to those found in the physical health population (Hall et al., 2002). Porcerelli et al. (2015) used the Patient-Doctor Relationship Questionnaire (PDRQ-9) (Van der Feltz-Cornelis et al., 2014), which examines patient perceptions of trust and agreement on goals and interpersonal bond. The

scale has not been validated in oncology populations, however reported means were similar to those reported by Van der Feltz-Cornelis et al. (2014) in a physical health population.

Studies also differed in measures used to examine distress. Two studies (Clark et al., 2011; Harding et al., 2015), used the General Health Questionnaire (GHQ) (Goldberg et al., 1997), however mean scores were not reported. Porcerelli et al. (2015) used the Generalized Anxiety Disorder-2 (GAD-2) (Kroenke et al., 2007), for which mean scores were higher than those of a primary care sample (Kroenke et al., 2007) and the Patient Health Questionnaire-2 (PHQ-2) (Kroenke et al., 2002), for which means did not differ from previous use in an oncology population (Lazenby, Dixon, Bai, & McCorkle, 2014). The remaining studies measuring distress used the Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983) which has been previously used in oncology populations (Osborne, Elsworth, Sprangers, Oort, & Hopper, 2004). One study used the HADS reported mean scores (Brédart et al., 2015), which were in line with previous scores in an oncology population (Osborne et al., 2004).

(1) To what extent does patient attachment style predict dissatisfaction with patient-physician relationships or distress in cancer patients?

Studies examined links between attachment style and patient-physician relationships or distress. It was considered for the purposes of this review that the ideal study design would be prospective, where attachment at baseline is used to predict relationship dissatisfaction or distress at a later point whilst controlling relationship dissatisfaction or distress at baseline. Ideally, variables known to be associated with both attachment style and relationship dissatisfaction or distress should be controlled. One study used this design (Brédart et al., 2015). Two studies used prospective designs but

did not control outcome variables at baseline (Hinnen et al., 2014 and Holwerda et al., 2013). Six studies used a cross-sectional design.

The Brédart et al. (2015) prospective study of 283 recently diagnosed and treated breast cancer patients examined whether main and interactive effects of breast cancer survivors' perceived communication skills, satisfaction with care, attachment style and self-esteem (measured at first time-point) independently predicted their information needs eight months after treatment completion. Information needs were measured using the information needs subscale of the Supportive Care Needs Survey (Boyes et al., 2009) and controlled at baseline. Age at diagnosis, education level, marital status, having children, being professionally active, clinical data and treatment were also controlled. Attachment style was not found to predict information needs. A limitation of this study is that the outcome variable was narrowly construed as information needs, and wider conception of the clinical relationships would better capture the likely intricacy and complexity of their nature.

In a prospective study with three, nine and 15-month follow-up of patients with one of a number of different cancers, Hinnen et al. (2014) examined the main and interactive effects of trust and anxious and avoidant attachment on distress, physical functioning and physician distrust. Multivariate analyses controlled for age, gender, cancer type and presence or absence of co-morbidities. Higher attachment anxiety predicted lower physical functioning after three months, and higher anxiety interacted with lower physician trust to predict both distress and poorer physical functioning over three and nine months. Higher avoidant attachment interacted with lower trust to predict greater distress over three months. In the multivariate analysis, the authors did not control for previous measures of either physical functioning or distress. Thus, it cannot be argued on the basis of this study that attachment or distrust preceded distress and physical

functioning, and it may be more appropriate to consider this design to be limited by the same problems as a cross-sectional design. Similarly, in a prospective study of 130 patients recently diagnosed with various cancers, Holwerda et al. (2013) assessed trust and satisfaction with clinical relationships, and distress, at three and nine months after diagnosis. Using a binomial predictor (secure versus insecure attachment) based on the Attachment Style Interview (Bifulco et al., 2002), they found insecurely attached patients reported greater distress. The authors did not statistically control distress at baseline. Covariates associated with attachment and trust were not named but were reported to have been taken into account.

Calvo, et al. (2014) and Clark et al. (2011) reported links between attachment style and patient-physician working alliance while the remaining cross-sectional studies (Harding et al., 2015; Pegman et al., 2011; Porcerelli et al., 2015) consistently found links between attachment style or constructs that have convergent validity with attachment style, and distress. These studies used a wide range of control variables, with little agreement regarding core variables to be controlled.

Overall, the reviewed studies showed consistency in the cross-sectional studies linking attachment style to patient distress and the quality of their relationships with clinicians. The prospective research is less convincing. The Hinnen et al. (2014) and Holwerda et al. (2013) studies showed prospective links, but did not control for outcome variables at baseline, and the Brédart et al. (2015) study, which controlled for outcome measures at baseline, did not demonstrate prospective prediction of information needs.

(2) What factors mediate or moderate the effects of attachment style on clinical relationships and distress in cancer patients?

Two studies reported variables that may mediate relationships between attachment style and outcome (Clark 2011; Holwerda, 2013) and two studies reported variables that may moderate these relationships (Hillen, 2014; Hinnen, 2014).

Holwerda et al. (2013) assessed trust, satisfaction, and distress, at three and nine months after diagnosis. Attachment was measured as a single dimension using the Attachment Style Interview (Bifulco et al., 2002), trust using the Wake Forest Physician Trust Scale (Hall et al., 2002), and distress using the Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983). A bootstrapping model of mediation (Preacher & Hayes, 2008) was used to assess the extent to which trust mediated relationships between attachment and satisfaction with the physician or distress. Trust mediated the relationship between secure attachment and satisfaction with the physician. As a secure-insecure attachment classification was used, it is not possible to examine differences between attachment dimensions, for instance, the hypothesis that avoidant attachment is more strongly associated with lower trust than anxious attachment. Although the study was prospective, the authors did not control distress at the first time-point and, thus, it is not possible to delineate the temporal sequencing of mediation.

In 100 recently diagnosed breast cancer patients Clark et al. (2011) examined whether attachment style would mediate relations between self-reported childhood abuse and patients' views that they did not receive complete support from clinicians. Attachment style was assessed using the Relationship Questionnaire (Bartholomew & Horowitz, 1991) and the Relationship Scales Questionnaire (Griffin & Bartholomew, 1994). Positive or negative views of 'self' and 'others' scores were used for this study. A logistic regression approach to mediation was used, where the addition of the attachment

variables reduced the odds associated with abuse from a significant 7.1 to a nonsignificant 3.4, consistent with mediation of the effect of abuse by a negative ‘self’ model. However, issues within a regression-based approach to mediation have been well-described and bootstrapping is the preferred method (Preacher & Hayes, 2004). The mediation studies cannot be regarded as showing causal links as Clark et al. (2011) was cross-sectional, and Holwerda et al. (2013) did not control outcome variables at each time point, and thus should be regarded as being consistent with mediation rather than demonstrating it.

The interpretations produced by moderation analyses were clearer. In a controlled experiment with 345 cancer survivors, Hillen et al. (2014) examined the main and interactive effects of trust in an oncologist with systematic manipulations of competence, honesty and caring in oncologist communication viewed on videotape, attachment avoidance and attachment anxiety. Observation order, age, gender and education were controlled for. Attachment style (attachment anxiety and attachment avoidance) measured by Experiences in Close Relationships short form (Wei et al., 2007) was not independently predictive of trust, measured by Trust in Oncologist Scale (Hillen et al., 2012) in the videotaped oncologist or patients’ own oncologist. However, avoidant attachment interacted with the higher honesty and higher caring video conditions to predict lower trust in the videotaped oncologist. A strength of the study is that the use of an experimental condition permitted the controlled manipulation of oncologists’ explicit communication of caring, honesty and competence and for the exploration of cause and effect in relation to this.

As described previously, Hinnen et al. (2014) also examined interactions between trust measured by the Wake Forest Physician Trust Scale-Shortened version (Hall et al., 2002), and attachment measured using the Experiences in Close Relationships Scale-Revised (Fraley et al., 2000), and the prediction of distress measured by the Hospital

Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983). Moderated regression analyses showed that high attachment anxiety and low trust predicted higher HADS scores, and high trust and lower attachment avoidance predicted lower HADS scores. Neither attachment dimension predicted HADS scores independently of the interaction with trust.

Discussion

Although attachment theory has been used to understand psychological adjustment to diagnosis and treatment in general healthcare (Ciechanowski, et al., 2001; 2004), there is a scarcity of research on attachment in oncological settings. This review included nine empirical studies related to attachment relationships between patients and clinicians in cancer care. While studies generally found that attachment style was associated with both well-being and the quality of clinical relationships, this must be interpreted in the context of cross-sectional designs used by most studies, where causality cannot be assumed as a given. One study found that trust mediated the relationship between secure attachment style and both relationships with physicians and lower distress (Holwerda et al., 2013), and one showed moderating relationships whereby trust facilitated the effects of attachment style (Hinnen et al., 2014).

A direct recommendation from this review is the use of prospective designs to examine the extent to which attachment style predicts changes in outcome variables, whilst simultaneously controlling baseline measures of these outcomes. However, links between attachment style and poorer patient perceptions of clinical relationships and distress are consistent with research from other healthcare areas (Ciechanowski, et al., 2001; 2004; Smith, Msetfi, & Golding, 2010), which provides assurance that attachment style is a potentially important predictor of psychological outcomes in cancer patients.

Although attachment theory posits that the inhibition of the formation of satisfactory clinical relationships by insecure attachment would cause distress, the reasons that attachment style is related to outcome are largely unclear and no study has adequately tested this prediction. The Holwerda et al. (2013) mediation study suggests that trust acts as a mediator, implying that insecurely attached patients may experience difficulties in establishing trust in their clinicians, which inhibits both the formation of good relationships and good outcomes. One study also found that trust moderates relationships between attachment style and distress (Hinnen et al., 2014). Studies in other healthcare populations posit trust as a possible mediator between attachment and clinical relationships (Burkitt-Wright et al., 2004; Ciechanowski & Katon, 2006; McWilliam et al., 2000; Salander, & Henriksson, 2005). The mediating relationship identified by Holwerda et al. (2013) is consistent with this research and the theoretical suggestion that attachment problems may manifest as a lack of trust in relationships (Salmon et al., 2009).

However, moderation of the effects of attachment style by trust suggests that trust may be partly independent of attachment style, and influenced by an unmeasured variable, but influences the ways in which attachment operates. A systematic review by Hillen, de Haus and Smets (2011) found that trusting relationships between patients and clinician in cancer treatment facilitated communication, medical decision making, decreases in patient fear and better treatment adherence. However the nature and impact of cancer patients' trust in their physician remains poorly understood. Further study is needed to understand how attachment and trust are conceptually related and their comparative contributions to strong clinical relationships and patient well-being.

Limitations

Patients' perceptions of and satisfaction with clinical relationships were not measured uniformly by studies. The psychometric and conceptual weaknesses of

measures of attachment styles have been documented in the literature (Bartholomew & Shaver, 1998) and the measures used varied widely. A potentially important consideration is the existing controversy regarding whether attachment is best conceptualised as continuous or dimensional and whether measures differing on this theoretical issue converge (Fraley, Waller & Brennan, 2011). Another problem is that some studies (Holwerda et al., 2013; Pegman et al., 2011) used a simple conceptualisation of secure versus insecure attachment, which overlooks possibly important differences between anxious and avoidant styles. Thus, conceptualisations of attachment styles may differ across studies in this review which means that comparisons across studies must be considered cautiously.

Different measures of clinical relationships were also employed. This may be due to the paucity of research regarding the emotional needs of patients' in relationships with clinicians, and the inherent subjectivity of clinical relationships (Salmon & Young, 2009). Different members of oncology teams were focused on by different studies. For example Pegman et al. (2011) focused on patient-consultant relationships, while Harding et al. (2015) focused on patient-nurse relationships. However, it is unclear from attachment theory, or from studies that explore patients' needs and preferences, as to who may be the most appropriate individuals in treatment teams (Clark et al., 2011). While consultant surgeons hold high levels of prestige, nurses and other staff spend greater time with patients and are more likely to be perceived to address emotional needs. It may be advisable in future research to ask patients to nominate who significant team members are to them.

The design of the studies was problematic given that the questions posed by the review would have been most appropriately answered by a prospective design, where attachment at baseline would be used to predict relationship dissatisfaction or distress at

a later point whilst controlling relationship dissatisfaction or distress at all time-points. None of the studies controlled for coping style which may be a confounding variable as it has been found to be associated with attachment and coping with chronic diseases (Schmidt, Nachtigall, Wuethrich-Martone, & Strauss, 2002).

However, the studies in this review included a range of cancer populations and patients at different points in their treatment and recovery. This provides a strong basis for generalisation. Three studies included patients with recurrence of cancer or metastasis, (Hinnen et al., 2014; Holwerda et al., 2013; Porcerelli et al., 2015). The findings of one study apply to cancer survivors (Hillen et al., 2014), while the findings of the Calvo et al. (2014) study apply to end-stage cancer patients.

Clinical Implications

If seeking attachment is unavoidable for patients in the face of life-threatening diagnoses, and their relationships with clinical staff are influenced by attachment style, it may be important to consider how attachment theory may be applied to healthcare provision. Attachment theory suggests that patients undergoing cancer treatment be provided with consistent and reliable contacts to provide a sense of security. Thus, providing education and psychological supervision to clinicians who have the most regular contact with patients will be helpful in establishing consistency and quality of these relationships. Promoting appropriate training and supervisory support for clinicians may support their understanding of the meanings of patient behaviour in clinical relationships and to better identify patients who may be at risk of distress. For example, patients with negative models of others may avoid building a relationship with staff, which may be misinterpreted by staff as not needing support.

Conclusion

The results of this review demonstrate that although attachment appears to play an important role in patient perceptions of clinical relationships and distress in the oncology setting, the paucity of research means that it is still difficult to ascertain the mechanism by which attachment style is related to the outcome variables. Studies explicitly designed for this purpose, together with replication across measures of attachment style and patients' satisfaction with, and perceptions of clinical relationships are warranted. Further research is important as understanding the mechanism by which attachment is implicated in patients' perceptions of clinical relationships may support the delivery of care and promote more desirable physical and mental health outcomes for patients.

References

- Aaronson, N. K., Ahmedzai, S., Bergman, B., Bullinger, M., Cull, A., Duez, N. J., . . . de Haes, J. C. (1993). The European Organization for Research and Treatment of Cancer QLQ-C30: A quality-of-life instrument for use in international clinical trials in oncology. *Journal of the National Cancer Institute*, 85(5), 365-376.
- Barrett-Lennard, G. T. (1986). The Relationship Inventory now: issues and advances in theory, method, and use. In L. S. Greenberg & W. M. Pinsof (Eds.) *The psychotherapeutic process: A research handbook* (pp. 439-476). New York: Guilford Press.
- Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology*, 61(2), 226-244.
- Bartholomew, K., & Shaver, P. R. (1998). Methods of assessing adult attachment: do they converge? In J. Simpson & W. Rholes (Eds.). *Attachment theory and close relationships*, 25-45. New-York: Guildford.
- Bifulco, A., Moran, M. P., Ball, C., & Bernazzani, O. (2002). Adult attachment style. I: Its relationship to clinical depression. *Social Psychiatry and Psychiatric Epidemiology*, 37(2), 50-59. doi: 10.1007/s127-002-8215-0
- Blanchard, C. G., Ruckdeschel, J. C., Fletcher, B. A., & Blanchard, E. B. (1986). The impact of oncologists' behaviours on patient satisfaction with morning rounds. *Cancer*, 58(2), 387-393.
- Bornstein, R. F., & Languirand, M. (2003). *Healthy dependency*. New York: Newmarket.
- Bornstein, R. F., Languirand, M. A., Geiselman, K. J., Creighton, J. A., West, M. A., Gallagher, H. A., & Eisenhart, E. A. (2003). Construct validity of the Relationship

- Profile Test: A self-report measure of dependency-detachment. *Journal of Personality Assessment*, 80(1), 64-74.
- Bowlby, J. (1969). *Attachment and Loss: Vol 1: Attachment*. New York: Basic Books.
- Bowlby, J. (1988). *A secure base: Clinical applications of attachment theory*. London: Routledge.
- Boyes, A., Girgis, A., & Lecathelinais, C. (2009). Brief assessment of adult cancer patients' perceived needs: Development and validation of the 34-item Supportive Care Needs Survey (SCNS-SF34). *Journal of Evaluation in Clinical Practice*, 15(4), 602-606 605p. doi: 10.1111/j.1365-2753.2008.01057.x
- Brédart, A., Bottomley, A., Blazeby, J., Conroy, T., Coens, C., D'haese, S., . . . Efficace, F. (2005). An international prospective study of the EORTC cancer in-patient satisfaction with care measure (EORTC IN-PATSAT32). *European Journal of Cancer*, 41(14), 2120-2131.
- Brédart, A., Kop, J. L., Griesser, A. C., Zaman, K., Panes-Ruedin, B., Jeanneret, W., ... & Fiszer, C. (2012). Validation of the 34-item Supportive Care Needs Survey and 8-item Breast module French versions (SCNS-SF34-Fr and SCNS-BR8-Fr) in breast cancer patients. *European Journal of Cancer Care*, 21(4), 450-459.
- Brédart, A., Kop, J. L., Fiszer, C., Sigal-Zafrani, B., & Dolbeault, S. (2015). Breast cancer survivors' perceived medical communication competence and satisfaction with care at the end of treatment. *Psycho-Oncology*. doi: 10.1002/pon.3836
- Brennan, K. A., Clark, C.L., & Shaver, P.R. (1988). Self-report measurement of adult attachment. In J. A. Simpson, & W.S. Rholes (Eds.). *Attachment theory and close relationships*. (pp. 47-76). New York: Guildford.

- Burkitt-Wright, E. B., Holcombe, C., & Salmon, P. (2004). Doctors' communication of trust, care, and respect in breast cancer: Qualitative study. *BMJ: British Medical Journal*, *328*(7444), 864-864. doi: 10.1136/bmj.38046.771308.7C
- Calvo, V., Palmieri, A., Marinelli, S., Bianco, F., & Kleinbub, J. R. (2014). Reciprocal empathy and working alliance in terminal oncological illness: the crucial role of patients' attachment style. *Journal of Psychosocial Oncology*, *32*(5), 517-534 518p. doi: 10.1080/07347332.2014.936651
- Cancer Research UK. (2015). *Cancer Statistics for the UK*. [online article] Retrieved from <http://www.cancerresearchuk.org/health-professional/cancer-statistics#heading-Zero>
- Cassileth, B. R., Lusk, E. J., Brown, L. L., Cross, P. A., Walsh, W. P., & Hurwitz, S. (1986). Factors associated with psychological distress in cancer patients. *Medical and Pediatric Oncology*, *14*(5), 251-254. doi: 10.1002/mpo.2950140503
- Cegala, D. J., Coleman, M. T., & Turner, J. W. (1998). The development and partial assessment of the medical communication competence scale. *Health communication*, *10*(3), 261-288.
- Ciechanowski, P. S., Katon, W. J., Russo, J. E., & Walker, E. A. (2001). The patient-provider relationship: Attachment theory and adherence to treatment in diabetes. *American Journal of Psychiatry*, *158*(1), 29-35.
- Ciechanowski, P.S., & Katon, W. J. (2006). The interpersonal experience of health care through the eyes of patients with diabetes. *Social Science & Medicine*, *63*(12), 3067-3079.

- Ciechanowski, P., Russo, J., Katon, W., Von Korff, M., Ludman, E., Lin, E., . . . Bush, T. (2004). Influence of patient attachment style on self-care and outcomes in diabetes. *Psychosomatic Medicine*, *66*(5), 720-728.
- Clark, L., Beesley, H., Holcombe, C., & Salmon, P. (2011). The influence of childhood abuse and adult attachment style on clinical relationships in breast cancer care. *General Hospital Psychiatry*, *33*(6), 579-586. doi: 10.1016/j.genhosppsych.2011.07.007
- Collins, N. L., & Read, S. J. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality and Social Psychology*, *58*(4), 644.
- Critical Appraisal Skills Programme. (2010). *CASP cohort study checklist*. Oxford: Critical Appraisal Skills Programme. Retrieved from <http://www.casp-uk.net/#!/casp-tools-checklists/c18f8>
- Drossman, D. A., Leserman, J., Nachman, G., Li, Z., Gluck, H., Toomey, T. C., & Mitchell, C. M. (1990). Sexual and physical abuse in women with functional or organic gastrointestinal disorders. *Annals of Internal Medicine*, *113*(11), 828-833.
- Fraley, R. C., Waller, N. G., & Brennan, K. A. (2000). An item response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology*, *78*(2), 350-365.
- Goldberg, D. P., Gater, R., Sartorius, N., Ustun, T., Piccinelli, M., Gureje, O., & Rutter, C. (1997). The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychological Medicine*, *27*(01), 191-197.
- Griffin, D. W., & Bartholomew, K. (1994). The metaphysics of measurement: The case of adult attachment. In K. B. D. Perlman (Ed.), *Attachment processes in adulthood* (pp. 17-52). London, England: Jessica Kingsley Publishers.

- Hahn, S. R., Kroenke, K., Spitzer, R. L., Brody, D., Williams, J. B., & Linzer, M. . (1996).
The difficult patient. *Journal of General Internal Medicine, 11*(1), 1-8.
- Hall, M. A., Zheng, B., Dugan, E., Camacho, F., Kidd, K. E., Mishra, A., &
Balkrishnan, R. (2002). Measuring patients' trust in their primary care providers.
Medical Care Research and Review, 59(3), 293-318.
- Harding, R., Beesley, H., Holcombe, C., Fisher, J., & Salmon, P. (2015). Are patient–
nurse relationships in breast cancer linked to adult attachment style? *Journal of
Advanced Nursing, 71*(10), 2305-2314. doi: 10.1111/jan.12693
- Hazan, C., & Shaver, P. R. (1994). Deeper into attachment theory. *Psychological Inquiry,*
5(1), 68-79.
- Hill, J., Murray, L., Woodall, P., Parmar, B., & Hentges, F. (2004). Recalled relationships
with parents and perceptions of professional support in mothers of infants treated
for cleft lip. *Attachment & Human Development, 6*(1), 21-30 10p.
- Hillen, M. A., de Haes, H. C., & Smets, E. (2011). Cancer patients' trust in their
physician—A review. *Psycho-Oncology, 20*(3), 227-241.
- Hillen, M. A., de Haes, H. C., Stalpers, L. J., Klinkenbijnl, J. H., Eddes, E. H., Verdam,
M. G., & Smets, E. M. (2014). How attachment style and locus of control
influence patients' trust in their oncologist. *Journal of Psychosomatic Research,*
76(3), 221-226. doi: 10.1016/j.jpsychores.2013.11.014
- Hillen, M., Koning, C., Wilmink, J., Klinkenbijnl, J., Eddes, E., Kallimanis-King, B., . . .
Smets, E. (2012). Assessing cancer patients' trust in their oncologist:
Development and validation of the Trust in Oncologist Scale (TiOS). *Supportive
Care in Cancer, 20*(8), 1787-1795.
- Hinnen, C., Pool, G., Holwerda, N., Sprangers, M., Sanderman, R., & Hagedoorn, M.
(2014). Lower levels of trust in one's physician is associated with more distress

- over time in more anxiously attached individuals with cancer. *General Hospital Psychiatry*, 36(4), 382-387 386p. doi: 10.1016/j.genhosppsych.2014.03.005
- Holwerda, N., Sanderman, R., Pool, G., Hinnen, C., Langendijk, J. A., Bemelman, W. A., . . . Sprangers, M. A. G. (2013). Do patients trust their physician? The role of attachment style in the patient-physician relationship within one year after a cancer diagnosis. *Acta Oncologica*, 52(1), 110-117 118p. doi: 10.3109/0284186x.2012.689856
- Hope-Stone, L., Brown, S. L., Heimann, H., Damato, B., & Salmon, P. (2015). How do patients with uveal melanoma experience and manage uncertainty? A qualitative study. *Psycho-Oncology*, 24(11), 1485-1491.
- Horvath, A. O., & Greenberg, L. S. (1989). Development and validation of the Working Alliance Inventory. *Journal of Counselling Psychology*, 36(2), 223-233.
- Hunter, J. J., & Maunder, R. G. (2009). Using attachment theory to understand illness behavior. *General Hospital Psychiatry*, 23(4), 177-182.
- Isaksson, J., Salander, P., Granström, B., & Laurell, G. (2014). Critical incidents reveal how patients with head and neck cancer construct their 'secure base' as a 'helping system.' *Journal of Psychosocial Oncology*, 32(3), 322-341.
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9. *Journal of General Internal Medicine*, 16(9), 606-613.
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2002). The PHQ-15: Validity of a new measure for evaluating the severity of somatic symptoms. *Psychosomatic Medicine*, 64(2), 258-266.
- Kroenke, K., Spitzer, R. L., Williams, J. B., Monahan, P. O., & Löwe, B. (2007). Anxiety disorders in primary care: prevalence, impairment, comorbidity, and detection. *Annals of internal medicine*, 146(5), 317-325.

- Lazenby, M., Dixon, J., Bai, M., & McCorkle, R. (2014). Comparing the distress thermometer (DT) with the Patient Health Questionnaire (PHQ)-2 for screening for possible cases of depression among patients newly diagnosed with advanced cancer. *Palliative and Supportive Care, 12*(01), 63-68.
- Lilliehorn, S., Hamberg, K., Kero, A., & Salander, P. (2010). 'Admission into a helping plan': A watershed between positive and negative experiences in breast cancer. *Psycho-Oncology, 19*(8), 806-813.
- Maddams, J., Brewster, D., Gavin, A., Steward, J., Elliott, J., Utley, M., & Moller, H. (2009). Cancer prevalence in the United Kingdom: Estimates for 2008. *British Journal of Cancer, 101*(3), 541-547.
- Maunder, R. G., Panzer, A., Viljoen, M., Owen, J., Human, S., & Hunter, J. J. (2006). Physicians' difficulty with emergency department patients is related to patients' attachment style. *Social Science & Medicine, 63*(2), 552-562.
- McWilliam, C. L., Brown, J. B., & Stewart, M. (2000). Breast cancer patients' experiences of patient–doctor communication: A working relationship. *Patient Education and Counseling, 39*(2–3), 191-204. doi:
[http://dx.doi.org/10.1016/S0738-3991\(99\)00040-3](http://dx.doi.org/10.1016/S0738-3991(99)00040-3)
- Mikulincer, M., Shaver, P. R., & Pereg, D. (2003). Attachment theory and affect regulation: The dynamics, development, and cognitive consequences of attachment-related strategies. *Motivation and emotion, 27*(2), 77-102.
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *Annals of Internal Medicine, 151*(4), 264-269.
- Osborne, R. H., Elsworth, G. R., Sprangers, M. A. G., Oort, F. J., & Hopper, J. L. (2004). The value of the Hospital Anxiety and Depression Scale (HADS) for comparing

- women with early onset breast cancer with population-based reference women. *Quality of Life Research*, 13(1), 191-206.
- Parker, G., Tupling, H., & Brown, L. (1979). A parental bonding instrument. *British Journal of Medical Psychology*, 52(1), 1-10.
- Pegman, S., Beesley, H., Holcombe, C., Mendick, N., & Salmon, P. (2011). Patients' sense of relationship with breast cancer surgeons: The relative importance of surgeon and patient variability and the influence of patients' attachment style. *Patient Education and Counseling*, 83(1), 125-128. doi: <http://dx.doi.org/10.1016/j.pec.2010.04.023>
- Porcerelli, J. H., Bornstein, R. F., Porcerelli, D., & Arterbery, V. E. (2015). The complex role of personality in cancer treatment: Impact of dependency-detachment on health status, distress, and physician-patient relationship. *Journal of Nervous and Mental Disease*, 203(4), 264-268. doi: 10.1097/nmd.0000000000000276
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior research methods, instruments, & computers*, 36(4), 717-731.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3), 879-891.
- Ravitz, P., Maunder, R., Hunter, J., Sthankiya, B., & Lancee, W. (2010). Adult attachment measures: A 25-year review. *Journal of Psychosomatic Research*, 69(4), 419-432.
- Rodin, G., Walsh, A., Zimmermann, C., Gagliese, L., Jones, J., Shepherd, F. A., . . . Mikulincer, M. (2007). The contribution of attachment security and social support

- to depressive symptoms in patients with metastatic cancer. *Psycho-Oncology*, 16(12), 1080-1091.
- Rosenberg, M. (1989). *Society and the adolescent self-image (revised edition)*. Middletown: Wesleyan University Press.
- Salander, P., & Henriksson, R. (2005). Severely diseased lung cancer patients narrate the importance of being included in a helping relationship. *Lung Cancer*, 50(2), 155-162.
- Salmon, P., Hill, J., Krespi, R., Clark, L., Fisher, J., & Holcombe, C. (2006). The role of child abuse and age in vulnerability to emotional problems after surgery for breast cancer. *European Journal of Cancer*, 42(15), 2517-2523.
- Salmon, P., & Young, B. (2005). Core assumptions and research opportunities in clinical communication. *Patient Education and Counselling*, 58(3), 225-234.
- Salmon, P., & Young, B. (2009). Dependence and caring in clinical communication: The relevance of attachment and other theories. *Patient Education and Counseling*, 74(3), 331-338.
- Schmidt, S., Nachtigall, C., Wuethrich-Martone, O., & Strauss, B. (2002). Attachment and coping with chronic disease. *Journal of Psychosomatic Research*, 53(3), 763-773. doi: [http://dx.doi.org/10.1016/S0022-3999\(02\)00335-5](http://dx.doi.org/10.1016/S0022-3999(02)00335-5)
- Seetharamu, N., Iqbal, U., & Weiner, J. S. (2007). Determinants of trust in the patient - oncologist relationship. *Palliative & Supportive Care*, 5(4), 405-409 405p.
- Smith, A. E., Msetfi, R. M., & Golding, L. (2010). Client self-rated adult attachment patterns and the therapeutic alliance: A systematic review. *Clinical Psychology Review*, 30(3), 326-337.

- Tracey, T. J., & Kokotovic, A. M. (1989). Factor structure of the working alliance inventory. *Psychological Assessment: A journal of consulting and clinical psychology*, 1(3), 207.
- Van der Feltz-Cornelis, C. M., Van Oppen, P., Van Marwijk, H. W., De Beurs, E., & Van Dyck, R. (2004). A patient-doctor relationship questionnaire (PDRQ-9) in primary care: development and psychometric evaluation. *General Hospital Psychiatry*, 26(2), 115-120.
- Wallston, K. A., Wallston, B. S., & DeVellis, R. (1978). Development of the multidimensional health locus of control (MHLC) scales. *Health Education & Behavior*, 6(1), 160-170.
- Waters, E., Merrick, S., Treboux, D., Crowell, J., & Albersheim, L. (2000). Attachment security in infancy and early adulthood: A twenty-year longitudinal study. *Child development*, 71(3), 684-689.
- Wei, M., Russell, D. W., Mallinckrodt, B., & Vogel, D. L. (2007). The Experiences in Close Relationship Scale (ECR)-short form: Reliability, validity, and factor structure. *Journal of Personality Assessment*, 88(2), 187-204.
- Zabora, J., BrintzenhofeSzoc, K., Curbow, B., Hooker, C., & Piantadosi, S. (2001). The prevalence of psychological distress by cancer site. *Psycho-Oncology*, 10(1), 19-28.
- Zigmond, A. S., & Snaith, R. P. (1983). The Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica*, 67(6), 361-370. doi: 10.1111/j.1600-0447.1983.tb09716.x

Chapter 2: Empirical paper

Do patients' perceptions of the quality of their relationships with clinicians mediate relationships between attachment style and distress in ocular melanoma patients?

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Prepared in accordance with guidelines for submission to Psychology and Health (Appendix B)

Abstract

Ocular melanoma (OM) patients experience emotional and practical challenges related to diagnosis, treatment and prognostication. Relationships with medical staff are important to patients living with cancer diagnoses and patients' perceptions of the quality of relationships with clinicians might reduce their experiences of distress. Patients' attachment styles predict lower distress, and may influence distress because attachment may help them to achieve subjectively good relationships with clinicians. The objective of this project was to test whether links between attachment and lower distress are mediated by patients' perceptions of the quality of their relationships with consultants and nurses. A quantitative cross-sectional study of recently diagnosed OM patients using self-report questionnaires was used to examine attachment style, perceived quality of clinical relationships, anxiety, depression and potential covariates, including coping, social support and religious beliefs. Correlational analysis showed secure attachment was negatively related to anxiety and depression and positively related to patients' perceptions of relationship quality. Mediation analysis showed no evidence that perceptions of professional relationships was a mediator. Secure attachment and perceived quality of relationships with medical staff independently predicted anxiety and depression. Further research is warranted to understand why perceptions of relationships with medical staff are important after diagnosis and how these might be improved.

Keywords: Ocular melanoma, patient-clinician relationship, attachment style, emotional distress.

Introduction

Ocular melanoma (OM) is a rare cancer of the eye. OM may be uveal or choroidal, of which the uveal type is most common (Brandberg, Kock, Oskar, Af Trampe, & Seregard, 2000). The incidence of uveal melanoma diagnoses in the UK is approximately 500 to 600 per year (Eye Cancer, 2015, para 8). Treatment may involve one or more of enucleation,

radiotherapy, phototherapy or surgical resection and may result in loss of vision or facial disfigurement (Damato & Heimann, 2013). Although the initial cancer is treatable, approximately 50% of patients will develop metastatic disease (Kujala, Kivelä, & Mäkitie, 2003), usually of the liver, and die within eight to nine years (Damato, Eleuteri, Fisher, Coupland, & Taktak, 2008; Singh, Turell, & Topham, 2011). Thus, patients with a diagnosis of OM face challenges in relation to adjustment and uncertainties concerning treatment and prognosis (Hope-Stone, Brown, Heimann, Damato, & Salmon, 2015) and thus show high levels of anxiety and depression (Brandberg et al., 2000; Linden, Vodermaier, MacKenzie, & Greig, 2012).

An important source of comfort for diagnosed cancer patients is their perceptions of the quality of their relationships with medical staff, in terms of being treated empathically, acknowledged as an individual, and respected (Burkitt-Wright, Holcombe, & Salmon, 2004; Isaksson, Salander, Granström, & Laurell, 2014; Salander & Henriksson, 2005). Studies taking quantitative approaches have measured working alliance in relation to patients' perception of shared goals, tasks and bond, satisfaction with clinicians' information provision, trustworthiness, helpfulness, understanding, dedication, accessibility, agreement about patients' problems, satisfaction with clinicians as a source of practical and emotional support and contentment with care received (Brédart, Kop, Fiszer, Sigal-Zafrani, & Dolbeault, 2015; Calvo, Palmieri, Marinelli, Bianco & Kleinbub, 2014; Clark, Beesley, Holcombe and Salmon, 2011; Hill, Murray, Woodall, Parmar & Hentges, 2007; Hinnen, et al., 2014; Porcerelli et al., 2015). High quality relationships are associated with less psychological morbidity (Burkitt-Wright et al., 2004; Fallowfield, Hall, Maguire, & Baum, 1990; Lilliehorn, Hamberg, Kero, & Salander, 2010; Salander & Henriksson, 2005).

The comforting properties of patients' relationships with clinicians have been viewed through the lens of attachment theory, which posits that people derive feelings of comfort and

security from strong interpersonal attachments to caregivers during times of crisis (Bowlby, 1969; Bowlby, 1988; Ciechanowski, Walker, Katon, & Russo, 2002; Salmon et al., 2007). Newly-diagnosed cancer patients experience distress and uncertainty over the threat to life posed by serious illness, leading to the activation of attachments towards clinical caregivers (Hunter & Maunder, 2001; Lilliehorn, et al., 2010). Previous studies have indicated a relationship between attachment and patient perceptions of trust, satisfaction with clinicians as a source of practical and emotional support and working alliance (Harding, Beesley, Holcombe, Fisher & Salmon, 2015; Hinnen et al., 2014; Pegman, Beesley, Holcombe, Mendick & Salmon, 2011).

Attachment, clinical care-seeking and distress

Attachment theory is based in the evolutionary benefit of infant-carer attachments, whereby infant mammals form attachments to carers who provide nurturance and protection at times of threat (Bowlby, 1969; 1988). The quality of caregiver responsiveness in early life has strong implications for the ways that adults conduct relationships and respond to threat (Mikulincer & Shaver, 2007; Shaver & Hazan, 1993). Specifically, the quality of an individual's early relationships with caregivers shape their schemas or expectations of close relationships through adulthood (Bowlby, 1988). These schemas determine attachment style; stable predispositions to think and behave in particular ways with regard to close relationships.

Attachment style has been conceptualised in a number of ways. Early research centred on Ainsworth, Blehar, Waters and Wall's (1978) typology of secure, anxious and avoidant attachment styles in infancy and Hazan and Shaver's (1987) conceptualization of secure, avoidant and anxious-ambivalent adult attachment styles in romantic relationships. Later, Bartholomew and Horowitz (1991) and Brennan, Clark and Shaver (1998) conceptualised attachment styles across two dimensions defined by attachment anxiety and attachment avoidance. According to Ainsworth et al. (1978), avoidant infants occupied the area where

avoidance was high and anxiety was low, while Bartholomew and Horowitz (1991) presented a distinction between “dismissing avoidant” (high avoidance and low anxiety) and “fearful avoidance” (high avoidance and anxiety). In line with Bowlby’s (1969; 1988) theory, attachment anxiety and avoidance is measurable and related to affect regulation and relationship functioning (Mikulincer, Shaver & Pereg, 2003). Within the two dimensions, the secure space is the space where anxiety and avoidance are low, the anxious space is defined by high anxiety and low avoidance and the avoidant space is the area where avoidance is high (Mikulincer et al., 2003).

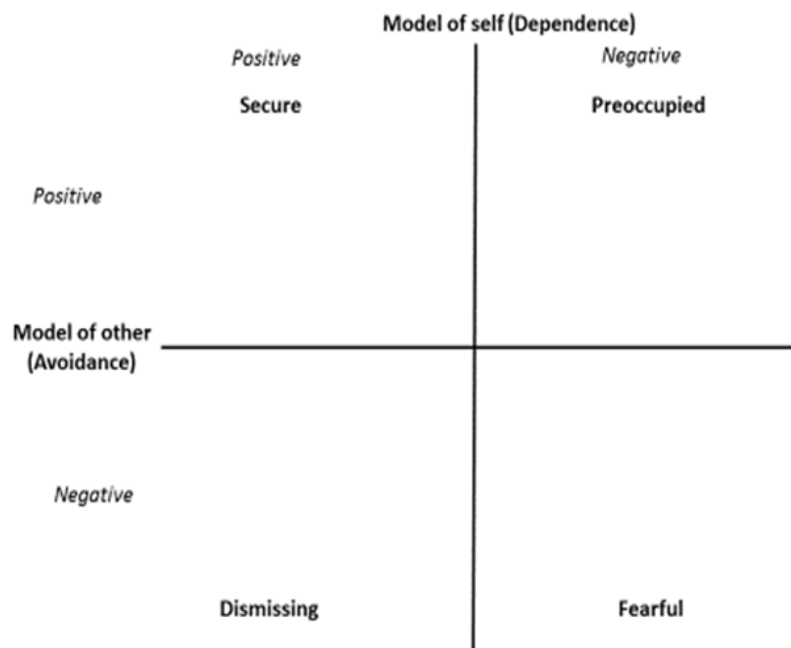


Figure 1. Diagram illustrating dimensional model of attachment reproduced from “Attachment styles among young adults: A test of a four-category model” by K. Bartholomew and L.M. Horowitz, 1991, *Journal of Personality and Social Psychology*, 61 (2), p.227.

Individuals with a secure attachment style perceive that they are loveable and worthy of care. They have internalised a positive model of self and others, and expect that those close to them can provide safety and comfort when needed. They seek, experience less anxiety in,

and benefit from close relationships. Individuals with insecure attachment styles have internalised a negative model of themselves and/or others, marked by increased attachment anxiety and/or attachment avoidance in close relationships (Griffin & Bartholomew, 1994). Preoccupied attachment, conceptualised as high attachment anxiety and low attachment avoidance, involves an unworthy or unloveable perception of the self, and the expectation that others will be rejecting, and dismissing and fearful attachment, conceptualised as high attachment avoidance are characterized by negative perceptions of others' trustworthiness (Bartholomew & Horowitz, 1991). These schemas are the basis for consistent patterns of behaviour. Preoccupied individuals strive to gain acceptance of others as a means for self-acceptance and relationships may be over-involved. Avoidant individuals strive to avoid depending on others (Mikulincer, Shaver & Pereg, 2003). The term attachment style denotes regularities in attachment, but may be used to refer to both schemas and related cognitions and behaviours. Individuals who have not had an opportunity to develop positive internal working models are less able to reflect on the mental state of themselves and others (Fonagy, Steele, Steele, Moran, & Higgitt, 1991; Hunter & Maunder, 2001; Slade, 1999).

Bartholomew and Horowitz' (1991) model has been applied to interpersonal relationships in healthcare (Ciechanowski, Katon, Russo & Walker, 2001). Evidence suggests that patients with anxious and avoidant attachment styles perceive therapeutic, clinical alliances and professional support less favourably (Ciechanowski, et al., 2002; Clark et al., 2011; Salmon, et al., 2007; Salmon & Young, 2009; Smith, Msetfi, & Golding, 2010), and thus receive less benefit, and experience a negative impact on well-being (Ciechanowski, et al., 2002; Hinnen et al., 2014; Holwerda et al., 2013; Rodin et al., 2007). For example, the experience of abuse in childhood, which affects the formation of positive mental models of self and others, is associated with reduced ability of cancer patients to form supportive relationships with clinical staff (Clark et al., 2011; Salmon et al., 2007).

Consistent with previous studies in cancer (Clark et al., 2011; Salmon et al., 2007), we operationalised distress in terms of scores on anxiety and depression scales. Clinical relationships are important in reducing distress in cancer patients. Theoretically, clinical relationships have been seen in terms of attachments. Thus, the ability of the individual to form high quality relationships with clinicians, which lead to better well-being, will be influenced by their attachment styles. Individuals with insecure attachment styles should experience more difficulty in forming good quality clinical relationships, and thus experience greater distress. The study aim was to determine if links existed between ocular melanoma patients' attachment styles and scores on anxiety and depression, measured by the Hospital Anxiety and Depression Scale, and to test whether this relationship is mediated by patients' perceptions of the quality of relationships with clinicians.

Zhao, Lynch and Chen (2010), specify pre-conditions which must be met to test for mediation: that the predictor (attachment style) be linked to the mediator (patients' perceived quality of the relationship with the consultant and nurse) and that the mediator be linked to the criterion (HADS anxiety and depression) controlling the predictor. If these conditions are met, the mediation effect can be directly estimated. Thus, the following hypotheses were proposed:

1. Greater anxious and avoidant attachment will be associated with greater anxiety and depression;
2. Greater anxious and avoidant attachment will be associated with perceptions of poorer quality relationships with clinicians;
3. Patients' perceptions of poorer quality relationships with clinicians will be associated with anxiety and depression, and
4. The relationship between anxious and avoidant attachment and anxiety and depression will be mediated by patients' perceptions of poorer quality relationships with clinicians.

Method

Participants

Patients are accepted into OM treatment immediately after diagnosis. Treatment occurs within six weeks of diagnosis and some treatments occur within days. Anxiety and depression is greater during the six months post diagnosis (Hope-Stone, Brown, Heimann, Damato, & Salmon, 2015). Patients were initially invited to participate within one week of diagnosis.

No pilot data were available to estimate effect size. Power was estimated based on Fritz and MacKinnon's (2007) estimates of a reasonable effect size for mediation of α and β paths of 0.26 each (approximately 7% predicted variance – half way between Cohen's (1988) description of small and medium effect sizes). At power of 0.80 and two-tailed alpha of 0.05, a sample size of 148 is recommended, using the Bootstrap test of mediation (Preacher & Hayes, 2008) (Appendix K).

A consecutive sample of 55 patients were recruited. The mean time since treatment was 1.74 months ($SD=1.1$). Numbers completing the study were lower than the 148 recommended by the power analysis. Later, the sampling frame was changed to allow patients diagnosed and treated within two years to join the study. This supplement increased participant numbers by 19 patients whose OM diagnosis occurred up to 17 months previously. The mean time since treatment for these patients was 10.53 months ($SD=1.87$).

Of the 239 patients approached, a total of 86 patients (36%) agreed to participate. Of these, 74 (86%) completed and returned questionnaires as described in Figure 2.

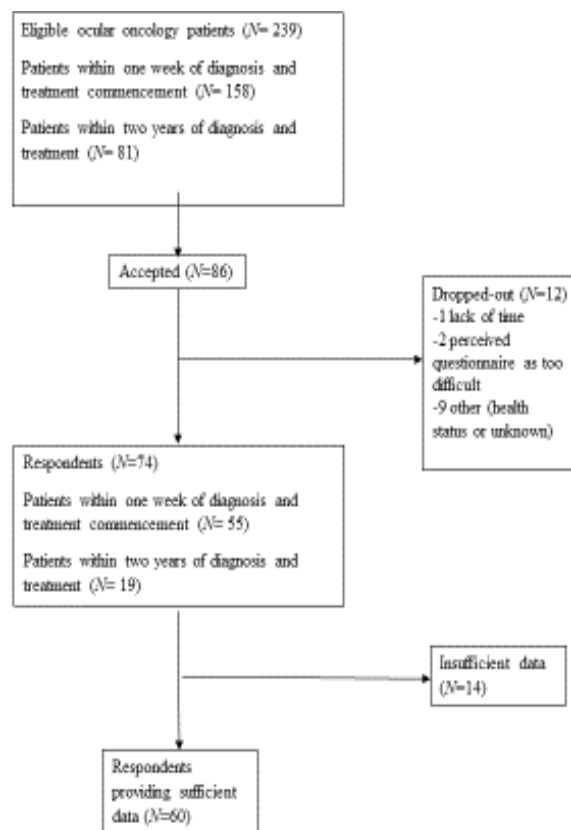


Figure 2. Participant flowchart

60 participants provided sufficient data for inclusion in the analysis (Table 1). Of the 14 who provided insufficient data, all failed to complete the questions pertaining to relationships with clinicians. Of the included sample, 28 were female and 32 were male. The mean age of the sample was 62.83 ($SD=13.15$); with a mean time since diagnosis of 4.31 months ($SD=4.29$) and a mean time since treatment of 3.95 months ($SD=4.10$). The sample was similar to prevalence figures in the United Kingdom in frequencies of diagnosis by gender and age (Huerta & Rodríguez, 2001). 13 participants had the affected eye enucleated (removed), while 46 retained their eye. The enucleation status of one patient could not be established. 24 participants were educated to or below GCSE level; 25 to A-Level or above, nine selected “other” and two were missing data. 20 participants were living with a partner, five were not living with a partner and 35 were missing data.

Table 1

Sample characteristics

	<i>N</i> =60
Gender	
Male	32
Female	28
Age-mean (SD)	62.84 (13.15)
Age-median (range)	64.0 (22-88)
Relationship status	
Married/living with partner	20
Not living with partner	5
<i>MD</i>	35
Education	
<GCSE and GCSE	24
A-Level and <A-Level	25
Other	9
<i>MD</i>	2
Diagnosis	
Months since diagnosis-mean	4.31(4.3)
<1 month	15
2-4 mths	29
7-9 mths	3
10-13 mths	10
14-17 mths	2
<i>MD</i>	1
Treatment	
Months since treatment-mean	3.95(4.09)
<1 month	21
2-4 mths	23
7-9 mths	4
10-14 mths	11
<i>MD</i>	1
Enucleation status	
Enucleation	13
No enucleation	46
<i>MD</i>	1
Other treatment	
Resection	1
Radiotherapy	41
Resection and radiotherapy	1
Mitomycin C	1
Observation	1
Declined treatment	1
<i>MD</i>	1

Design

A cross-sectional design was used. Self-report questionnaires measured dependent (anxiety and depression), independent (indicators of patients' attachment style) and mediating (patients' perceptions of clinical relationship quality) variables. Potential covariates related to attachment and clinical relationships in previous research were included (Assing Hvidt, Iversen & Ploug Hansen, 2013; Clark et al., 2011; Harding et al., 2015; Holwerda et al., 2013; Schmidt,

Nachtigall, Wuethrich-Martone, & Strauss, 2002). These included coping, social support and religious beliefs. Demographic covariates included age, education and gender taken from clinical records. Clinical covariates included diagnosis, time since diagnosis, treatment and time since treatment.

Procedure

The recruitment process was designed to allow adequate time and information to be provided for participants to make an informed decision about consent and to ensure safeguards were in place to protect participants. Approval was received from the University, National Research Ethics Service (REC: 15/NW/0247) and the NHS Trust Research and Development Department.

Patients who had received a diagnosis were consecutively identified from clinic lists at a specialist regional ocular melanoma centre. Following approval by the unit clinician, introductory letters were sent by post with detailed information about the study at least one week following treatment commencement, and patients were encouraged to contact the researcher to provide consent to be contacted if they were interested in participation. The researcher spoke to each potential participant on the telephone in order to discuss the study and to obtain consent. Participants who had spoken to the researcher and consented to participation were sent a consent form and the study questionnaire pack by post.

The inclusion criteria was patients who were over 18 years of age who had received a diagnosis of OM. Exclusion criteria were; being considered by the unit psychologist, prior to recruitment to be too distressed or to have a known impairment that would inhibit valid consent, acute clinical crises, patients with known metastatic disease, a second primary cancer since their diagnosis of OM or patients at risk of being caused significant psychological distress by taking part in the study (Harding et al., 2015; Pegman, et al., 2011, Salmon et al., 2007). All

participants were provided with information about sources of support following a diagnosis of OM.

Measures

As participants frequently experience eye discomfort and visual problems following their treatment, this study employed paper-based measures which were relatively brief whilst showing reliability and validity in oncology populations.

The Relationship Questionnaire (RQ) (Bartholomew & Horowitz, 1991) and The Relationship Scale Questionnaire (RSQ) (Griffin & Bartholomew, 1994), were used together to measure attachment style. The RQ and RSQ are both brief and have been successfully used together in research examining clinical relationships in physical health populations, including cancer (Ciechanowski et al., 2001; Ciechanowski et al., 2002) and by the present authors (Pegman et al., 2011). Data from the questionnaires were analysed following the method developed by Ognibene & Collins (1998) which is widely used in research in physical health populations (Ciechanowski et al., 2001; Ciechanowski et al., 2002; Pegman et al., 2011). Each scale assessed secure, dismissing, fearful and preoccupied attachment. Subscale scores for each measure were converted to z scores then summed to provide a total score which was used in the analysis (Ognibene & Collins, 1998). The RQ has been reported to demonstrate adequate test–retest reliability (Scharfe & Bartholomew, 1994), external validity (Schmitt et al., 2004) and convergent validity with other measures of attachment (Bartholomew & Horowitz, 1991).

The RSQ has adequate test–retest reliability (Griffin & Bartholomew, 1994), construct validity (Scharfe & Bartholomew, 1994), and convergent validity with the RQ (Reis & Grenyer, 2002) and other measures of attachment (Bartholomew & Horowitz, 1991; Fraley & Shaver, 1997). Reliability in this study was acceptable (Cronbach's $\alpha = .66$). Reliabilities of subscales in this study were satisfactory for Dismissing (Cronbach's $\alpha = .62$) and Fearful

subscales (Cronbach's $\alpha = .77$) and was lower for Secure (Cronbach's $\alpha = .48$) and Preoccupied subscales (Cronbach's $\alpha = .30$).

The Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983) was used as a primary measure of anxiety and depression. Factor analyses of the HADS has demonstrated a two factor structure in keeping with the HADS Anxiety (HADS-A) and HADS Depression (HADS-D) subscales (Bjelland et al., 2002). The HADS has been widely and successfully used as an outcome measure in physical health and cancer populations (Bjelland, Dahl, Haug, & Neckelmann, 2002) and although a general measure of anxiety and depression, oncology specific measures of anxiety and depression have not proved to be superior (Vodermaier, Linden, & Siu, 2009). Internal consistency of the HADS in cancer populations has been reported by several studies including Moorey et al. (1991) and Hammerlid et al. (1999). Internal consistency in this study was acceptable: Anxiety (Cronbach's $\alpha = .843$); Depression (Cronbach's $\alpha = .833$).

Patients' perceptions of relationships with clinicians were based upon questions developed by Hill et al. (2004). These have been previously modified to reflect patients' perceptions of relationships with individual clinicians and attachment security in cancer populations by Salmon et al. (2007) and Clark et al. (2011). Patients' perceptions of openness to providing information and trustworthiness were examined with regard to 'your consultant' and 'your specialist nurse at the ocular oncology centre.' Two items were used; 'Have you felt able to ask your consultant/specialist nurse questions that are most on your mind?' and 'Can you trust, talk frankly with, and share your feelings with your consultant/specialist nurse?' Five-point Likert scale were anchored by the terms 'never' and 'always.'

Covariates

Coping, social support and spirituality have been shown to be associated with both attachment and distress in patient populations (Assing Hvidt et al., 2013; Schmidt et al., 2002; Watson et al., 1991). To reduce the possibility of spurious correlation, these were used as covariates. The short version of the Mental Adjustment to Cancer Scale (Mini-MAC) (Watson et al., 1994) was used to assess cognitive and behavioural responses to cancer diagnosis. The Mini-MAC was developed as a brief measure of coping style in cancer patients through factor analysis of the Mental Adjustment to Cancer Scale (MAC) (Watson et al., 1988) and is widely used in cancer populations (Hulbert-Williams, Hulbert-Williams, Morrison, Neal & Wilkinson, 2012). Hulbert-Williams et al. (2012), found adequate validity and reliability of the scale in UK cancer patients. Full-scale reliability was acceptable in the sample (Cronbach's $\alpha = .834$). Helplessness-Hopelessness (Cronbach's $\alpha = .800$); Anxious-Preoccupation (Cronbach's $\alpha = .879$); Fighting Spirit (Cronbach's $\alpha = .698$); Cognitive Avoidance (Cronbach's $\alpha = .670$); Fatalism (Cronbach's $\alpha = .269$).

Perceived general social support was measured by the Medical Outcomes Social Support Survey (MOSSS) (Sherbourne & Stewart, 1991). The subscales have been shown to be valid in populations living with chronic conditions such as diabetes and coronary heart disease. MOSSS subscales have previously been associated with attachment, perceptions of relationships with individual clinicians and distress in cancer patients (Salmon et al., 2007). All Alphas are reported to be greater than 0.91 and the scores are stable over time (Sherbourne & Stewart, 1991). Full-scale reliability was acceptable in the sample (Cronbach's $\alpha = .956$). Emotional/Informational Support (Cronbach's $\alpha = .946$); Tangible Support (Cronbach's $\alpha = .937$); Affection (Cronbach's $\alpha = .910$); Positive Social Interaction (Cronbach's $\alpha = .960$).

The Systems of Belief Inventory (SBI-15) (Holland et al., 1998) has been validated and used in cancer populations and was used to examine religious and spiritual thoughts and actions. It shows good internal consistency, test-retest reliability and convergent, divergent and discriminant validity compared to other instruments measuring religious and spiritual beliefs, coping and distress in cancer patients (Holland et al., 1998). Full-scale reliability was acceptable in the sample (Cronbach's $\alpha = .974$); Social Support (Cronbach's $\alpha = .950$); Beliefs and Practices (Cronbach's $\alpha = .976$).

Information collected regarding age, gender, education, marital status, diagnosis, treatment, and time (in months) since diagnosis and treatment, were controlled as covariates. Prognosis was not included as this was not available for recently diagnosed patients.

Data analysis

Pearson product-moment correlation coefficients were conducted prior to mediation analysis. These are necessary to detect possible paths, through the identification of substantial correlations. Correction for multiple hypothesis testing was not used because this would lead to under-identification of potential paths. Bias-Corrected bootstrapping was used to statistically test for the mediation effect. Bootstrapping makes fewer assumptions about the sampling distribution of the effect and is more powerful whilst minimising Type One error probability than other tests (Preacher & Hayes, 2008). Attachment style was the independent variable and anxiety and depression the dependent variables. Patients' perceptions of relationships with clinicians were investigated as potential mediators in the relationship between the independent and dependent variables. Psychological, demographic and clinical covariates were used as control variables. SPSS version 22 was used for data analysis.

Results

Table 2 shows the means and standard deviations of study variables. Attachment scores are summed z-scores of RQ and RSQ subscale scores (Ognibene & Collins, 1998). HADS, Mini-Mac, MOSS and SBI-15R scores are subscale totals. Questions about patients' perceptions of relationships with clinicians (Hill et al., 2004) were summed to provide single scores for perceptions of consultant and nurse relationships.

All variables except the two perceptions of clinical relationship scales met the statistically acceptable criteria for kurtosis and skewness, between +/-2.00, (Lomax, & Hahs-Vaughn, 2013). The scores were highly negatively skewed as the modal response was 10/10, the maximum perception of quality possible. This is problematic for correlational analysis which employs parametric assumptions, although it is less concerning for the bootstrapping analysis. Thus each score was recoded to a binary variable in which scores of 0 and 1 were given to patients reporting the lowest possible score and maximum possible score, respectively in order to distinguish patients who feel their relationships with clinicians are of good quality from those who do not. This recoded score was used to estimate correlations, but the means in Table 2 and the mediation analysis used the original distribution of scores.

Table 2

Means and SDs of study variables

	Mean	SD
RQ Scales		
Secure	4.77	1.45
Dismissing	2.9	1.62
Preoccupied	2.63	1.32
Fearful	3.93	1.58
RSQ scales		
Secure	17.10	3.22
Dismissing	14.72	3.53
Preoccupied	9.26	6.27
Fearful	8.08	3.43
HADS scales		
Anxiety	5.36	3.93
Depression	3.20	3.40
Perceptions of clinical relationships		
1 Consultant	4.50	0.80
2 Consultant	4.52	0.77
Total	9.02	1.50
1 Nurse	4.56	0.83
2 Nurse	4.56	0.75
Total	9.02	1.46
Mini-Mac scales		
Helplessness-Hopelessness	11.18	3.14
Anxious-Preoccupation	18.30	5.29
Fighting Spirit	12.53	2.60
Cognitive Avoidance	10.30	2.54
Fatalism	13.93	2.39
MOSSS scales		
Emotional/Informational Support	33.01	6.86
Tangible Support	17.14	3.73
Affection	13.36	2.40
Positive Interaction	12.58	2.72
SBI-15R scales		
Beliefs and Practices	21.75	9.61
Social Support	8.56	4.36

Means were examined with regard to mediation components for education using a one-way ANOVA. No relationship was found between education and mediation variables (Appendix K), as found in previous studies (Hinnen et al., 2014; Holwerda et al., 2013). Variables for treatment type were too numerous to compare meaningfully with the mediation variables (Appendix L).

Correlational analysis

Table 3.

Pearson product-moment correlation coefficients between study variables

	Depression		Preocc		Consultant		Nurse	FS	HH	AP	F	CA	E/I S	TS	AS	PI	Beliefs	Support	Enuc/no		Time since	Time since	
	HADS	Secure	Dismissing	upied	Fearful	QPS	QPS	MiniMac	MiniMac	MiniMac	MiniMac	MiniMac	MOSS	MOSS	MOSS	MOSS	SBI	SBI	Age	Gender	enuc	diagnosis	treatment
Anxiety HADS	0.62**	-0.31**	0.33**	0.40**	0.33**	-0.19	-0.11	-0.02	0.68**	0.73**	0.01	0.04	-0.18	-0.30*	-0.42**	-0.44**	0.02	-0.12	-0.28*	-0.08	0.00	0.14	0.20
Depression		-0.45**	0.48**	0.45**	0.40**	-0.27*	-0.24	-0.15	0.60**	0.46**	-0.08	-0.03	-0.32*	-0.54**	-0.45**	-0.50**	0.09	-0.05	-0.26*	-0.09	0.07	0.22	0.26*
Secure			-0.25	-0.31	-0.36**	0.27*	0.30*	0.33*	-0.30*	-0.22	0.18	0.01	0.32*	0.23	0.18	0.26*	0.11	0.12	-0.05	-0.04	-0.21	-0.22	-0.20
Dismissing				0.24	0.82**	0.03	-0.01	-0.08	0.41**	0.37**	0.12	0.27*	-0.09	-0.30*	-0.38**	-0.42**	0.12	0.13	-0.12	-0.05	0.07	0.25	0.24
Preoccupied					0.17	-0.01	-0.06	-0.04	0.53**	0.27*	-0.02	0.22	-0.08	-0.21	-0.35**	-0.27*	0.06	-0.03	0.04	-0.33**	0.06	0.07	0.10
Fearful						-0.05	-0.05	-0.08	0.36**	0.35**	-0.14	0.24	-0.22	-0.25	-0.45**	-0.43**	-0.16	-0.04	-0.25*	-0.09	0.04	0.15	0.14
Consultant QPS							0.50**	0.20	-0.28*	-0.26*	0.13	0.02	0.20	0.08	0.13	0.03	0.06	0.10	0.22	-0.13	0.16	-0.03	-0.04
Nurse QPS								0.06	-0.28*	-0.22	0.00	-0.06	0.29*	0.14	0.07	0.09	-0.07	-0.05	0.13	-0.09	0.01	0.03	-0.01
FS MiniMac									-0.08	0.15	0.26*	0.14	0.14	0.07	0.13	0.12	0.14	0.03	-0.05	-0.18	0.00	0.04	0.00
HH MiniMac										0.63**	0.09	0.16	-0.29*	-0.35**	-0.43**	-0.39**	0.10	-0.03	-0.18	-0.12	0.16	0.15	0.21
AP MiniMac											0.07	0.13	-0.14	-0.23	-0.30*	-0.31*	0.05	-0.20	-0.30*	0.01	-0.03	0.10	0.09
F MiniMac												0.28*	0.18	0.07	0.10	-0.02	0.54**	0.38**	0.26*	0.17	0.28*	0.11	0.13
CA MiniMac													0.13	-0.05	-0.14	0.01	0.14	-0.04	0.01	-0.19	0.02	-0.03	-0.06
E/I S MOSS														0.50**	0.49**	0.67**	0.18	0.23	0.02	0.07	-0.18	-0.00	-0.04
TS MOSS															0.48**	0.63**	-0.04	0.12	0.15	0.12	-0.30*	-0.10	-0.16
AS MOSS																0.72**	0.17	0.22	0.11	0.29*	-0.17	0.00	-0.04
PI MOSS																	-0.04	0.04	0.02	0.04	-0.23	-0.20	-0.23
Beliefs SBI																		0.80**	0.29*	-0.02	0.05	0.35**	0.39**
Support SBI																			0.32*	-0.03	0.04	0.26	0.30*
Age																				-0.14	0.20	0.09	0.062
Gender																					-0.08	0.04	0.05
Enuc/no enuc																						0.00	0.06
Time since diagnosis																							0.98**

Note: Relationships between variables use partial correlations controlling age, gender, education, marital status, diagnosis, treatment, and time (in months) since diagnosis and treatment

**Significant at the 0.01 level (two-tailed). *Significant at the 0.05 level (two-tailed).

Key: FS=Fighting spirit; HH=Helplessness hopelessness; AP=Anxious preoccupation; F=Fatalism; CA=Cognitive avoidance; E/I S=Emotional/Informational support; TS=Tangible support; AS=Affectionate support; PI=Positive interaction

Hypothesis one: Greater anxious and avoidant attachment will be associated with greater anxiety and depression. As expected, secure attachment was negatively correlated with anxiety and depression scores. Insecure attachment styles showed a positive correlation with anxiety and depression. Incidentally, there was a negative relationship between age and anxiety and depression, as found in previous studies (Clark et al., 2011, Harding et al., 2015; Hinnen et al., 2014). Gender, having undergone enucleation or not and time since diagnosis were not related to study variables. Time since treatment showed a positive relationship with depression.

Hypothesis two: Greater anxious and avoidant attachment will be associated with perceptions of poorer quality relationships with clinicians. Secure attachment showed a positive correlation with perceived quality of consultant and nurse relationships. There was no significant relationship between insecure attachment styles and scores for perceptions of clinical relationships.

Hypothesis three: Patients' perceptions of poorer quality relationships with clinicians will be associated with anxiety and depression. Perceived quality of relationship with the consultant was negatively correlated with depression scores as predicted. Perceived quality of relationship with the nurse was not negatively correlated with depression, but approached significance.

Mediational analysis

Hypothesis four: The relationship between anxious and avoidant attachment and anxiety and depression will be mediated by patients' perceptions of poorer quality relationships with clinicians. Bootstrapping was used to statistically test for the mediational analysis. The demographic and clinical variables were included as control variables but are not included in the path diagrams. Covariates that could lead to spurious correlations need to be

correlated with HADS anxiety and depression, attachment and perceptions of relationship quality variables. Mini-Mac Helplessness-Hopelessness and Anxious-Preoccupation met these criteria, and therefore were included in the mediational analysis.

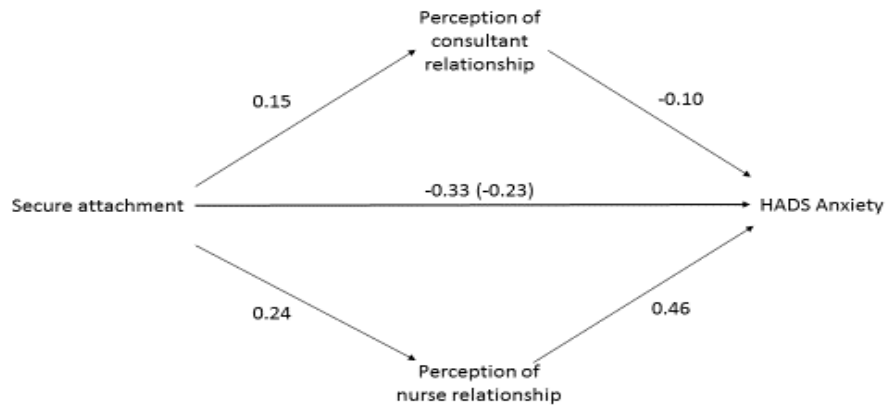


Figure 3. Path diagram illustrating standardized regression β weights showing possible mediation of relationship between secure attachment and HADS anxiety by perceptions of consultant and nurse relationships.

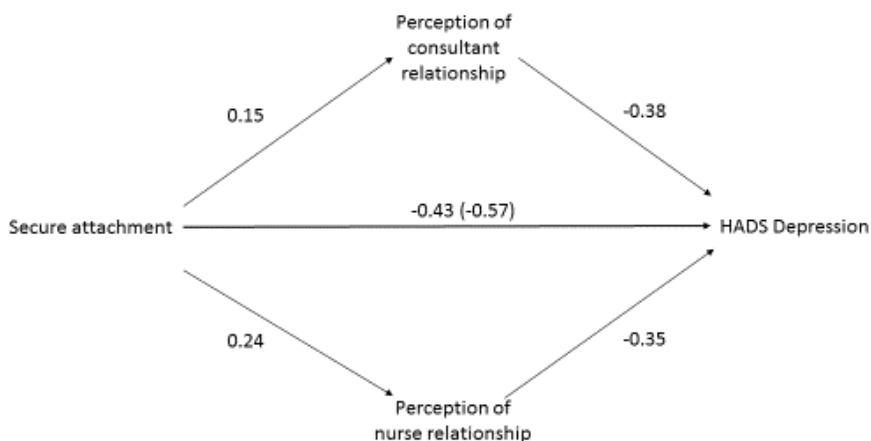


Figure 4. Path diagram illustrating standardized regression β weights showing possible mediation of relationship between secure attachment and HADS depression by perceptions of consultant and nurse relationships.

None of the paths in the mediational analysis were found to be significant. Neither the direct nor indirect paths between secure attachment and HADS anxiety were significant. Only the beta linking the perception of the quality of nurse relationship with HADS anxiety was significant, however this is likely to be due to perception of the quality of nurse relationship having a suppressor effect on the relationship between attachment and anxiety given the lack of significance of the paths in the model.

Table 4.

Bootstrap results for indirect effects

1 Anxiety				
	Estimate	SE	Lower 95% Confidence Interval	Upper 95% Confidence Interval
Perception of consultant relationship	-0.007	0.05	-0.148	0.053
Perception of nurse relationship	0.108	0.077	0.008	0.316
Total	0.101	0.077	-0.012	0.292

Note: 1000 bootstrap resamples

2 Depression				
	Estimate	SE	Lower 95% Confidence Interval	Upper 95% Confidence Interval
Perception of consultant relationship	-0.066	0.076	-0.336	0.01
Perception of nurse relationship	0.081	0.093	-0.446	0.021
Total	0.146	0.123	-0.544	0.016

Note: 1000 bootstrap resamples

Discussion

Although correlational analysis showed that secure attachment was negatively related to anxiety and depression and positively related to patients' perceptions of their relationships with clinicians, there was no evidence from mediational analysis that perceptions of relationships with clinicians was a mediator. Indeed the path diagrams showed that secure attachment and perceptions of relationships with clinicians were separate predictors of anxiety and depression. When hypotheses are not supported this may be due to methodology being inadequate to test the hypothesis or that the model itself is not a true representation of the relationship between the variables under investigation.

Previous studies found links between attachment style, patients' perceptions of clinical relationships and anxiety and depression (Harding et al., 2015; Hinnen et al., 2014; Holwerda et al., 2013; Pegman et al., 2011). This study replicates these findings in so much as these variables were correlated with each other, although only in the case of secure attachment. Replicating these findings provides some confidence that the measures chosen were appropriate and that their administration was largely adequate. Nonetheless, the power calculation demanded a larger sample. An implication of being underpowered is the possibility that such a larger sample may have showed mediation. In particular, the relationship between secure attachment and lower depression may be mediated by patients' perception of their relationship with the consultant in a larger sample (strangely the perception of the relationship with the nurse was positively associated with anxiety in Figure 3). The standardised betas in Figure 4 and the indirect estimates were sufficiently high to suggest that a larger sample may show support for the mediational hypothesis. It is important to emphasise that this does not mean that expanding the sample size would lead to significance, merely that the small sample size is a methodological flaw.

Theoretical implications

The findings of this study show that attachment is an important predictor of anxiety and depression in OM patients, as it is in other oncology patient groups (Harding et al., 2015; Hinnen et al., 2014; Holwerda et al., 2013; Pegman et al., 2011). The perceived quality of relationships with consultants and nurses is also important. This and other study designs are cross-sectional, thus it is unclear as to the causality of these relationships, particularly between perceptions of clinical relationship quality and anxiety and depression. As attachment style is a stable and cross-situational variable (Mikulincer et al., 2003), it is more likely that it causes variations in patients' perceptions of relationships with clinicians and anxiety and depression. Thus, the research supports the notion that, when facing potentially life-threatening diagnoses

patients' ability to benefit from dependence in clinical relationships (Harding et al., 2015; Salmon & Young, 2009) is an important focus for research. Nonetheless, prospective research is required to provide a clearer idea of causality amongst the study variables.

Perceptions of the clinical relationship are associated with lower anxiety and depression. This finding is consistent with research that emphasises the importance of patients' perceptions of clinical relationships (Harding et al., 2015; Lilliehorn et al., 2010; Salander & Henriksson, 2005; Salmon et al., 2007). It is important to consider that previous studies have used different measures, which tap into different aspects of the clinical relationship. The measures used in this study concern patients' perceptions that clinicians are trustworthy and open to providing information. Measures used in previous research included a measure of working alliance conceptualised by constructs related to emotional bond and agreement on goals and tasks, while others measured satisfaction in relation to physician behaviours, trust in the physician and perceived support (Brédart et al., 2015; Calvo et al., 2014; Clark et al., 2011; Harding et al., 2015; Hinnen et al., 2014; Holwerda et al. 2013; Pegman et al., 2011; Salmon et al., 2007). It will be important in future research to establish which aspects of clinical relationships may best buffer distress.

Limitations

The cross-sectional design did not allow for interpretation of cause and effect relationships to be delineated from the model. The sample size in this study did not lend itself full testing of the proposed model. There may have been an element of self-selection bias in the sample given the low response rate which may have affected the findings of the study. It should also be noted that correlations in Table 2 are not subject to correction for multiple testing, thus are potentially open to Type 1 error. The study participants were drawn from one specialist clinic only, and patients considered by the team psychologist to be too distressed to give valid consent were excluded, thus the study sample may have been biased towards being

less distressed than the population from which the sample was drawn and findings are specific to patients at this particular hospital. For the same reasons, patients undergoing acute clinical crises, with known metastatic disease, or with a second primary cancer since their diagnosis of OM were also excluded. Therefore these findings are only relevant to patients at this particular stage of treatment, and it is possible that patients experiencing more threatening diagnoses may have demonstrated more pronounced activation of attachment processes than in the present study participants. The cross-sectional design also limited the conclusions that can be drawn regarding the relationships between the study variables to the particular point following diagnosis and treatment that the patients were experiencing. Patients are likely to be particularly vulnerable and dependent on clinical staff immediately following diagnosis (Clark et al., 2011) and the majority of participants in the present study were recruited shortly after diagnosis and treatment and were not yet aware of their prognosis, which is a source of significant uncertainty (Hope-Stone et al., 2015).

The measures of attachment to clinical staff were associated with both attachment and distress. This provides some support for the validity of the measure. Nonetheless, these measures may be somewhat insensitive and consequently may not have shown a mediation effect. Attachments to the consultant and nursing staff may not have been established in the relatively short time that patients spent at the unit. Diagnosis and treatment can occur over two to three days and patients may have interacted with several different staff. Thus, patients may form attachments to health system staff and procedures as a whole rather than specific individuals (Hope-Stone, et al., 2015; Lilliehorn et al., 2010) or patients may utilise their existing family and friendship circles. Thus, research that widens the pool of potential attachments may show mediation.

Clinical implications

Although patients in this sample had limited contact with professional staff, their subjective perception of the quality of the clinical relationship was important. Given the trend towards increased fragmentation of treatment provision in cancer services in the UK (Jones, Marshall & Young, 2014), the results may be relevant to the experience of clinical relationships for patients who may be increasingly having brief but intense contact with different members of clinical staff. The implication that patients' subjective perception of the quality of their clinical relationship is important on two related fronts. First, consideration needs to be given to patients' potential feelings of loss when they are moved between clinicians. Second, it is important to establish procedures that ensure that different staff co-operate to contribute to a similar and positive patient experience of their relationships with clinicians. With regards to attachment style, other studies show that insecure attachment styles constitute risk factors for anxiety and depression (Hinnen et al., 2014; Holwerda et al., 2013). This study shows that lacking a secure attachment style also constitutes a risk factor. From a prevention viewpoint, it will be important to establish support structures to enable patients who lack a secure attachment style to better cope with the challenges of cancer diagnosis and treatment.

Attachment theory suggests that providing cancer patients undergoing treatment with consistent and reliable contacts with clinicians may provide a sense of security. Thus, supporting clinicians to understand how attachment processes may play out in a clinical setting may be of value to patients, in order that clinicians may identify and offer assistance to those likely to experience anxiety and depression. Providing appropriate education and psychological supervision to clinicians who have the most regular contact with patients may support their understanding of the meanings of patient behaviour in clinical relationships, and to better identify patients who may be at risk of distress. For example, if patients with negative models

of others avoid building a relationship with staff, this may be misinterpreted by staff as not needing support. Clinical psychology may have a role in supporting this work in clinical teams.

Conclusion

Perceptions of the quality of their relationships with clinicians were important to patients undergoing diagnosis and treatment for OM in this study. While secure attachment appeared to be related to patients' perceptions of clinical relationships, there was no evidence from mediational analysis that perceptions of clinical relationships was a mediator between secure attachment and depression. In fact, analysis showed that secure attachment and perceptions of clinical relationships were separate predictors of anxiety and depression. Further research is warranted in order to understand why perceptions of clinical relationships are important to patients at this point in cancer treatment in order to fully understand how healthcare professionals may gauge and respond to the support needs of individual patients.

References

- Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: Assessed in the strange situation and at home*. Hillsdale, NJ: Erlbaum.
- Assing Hvidt, E., Raun Iversen, H., & Ploug Hansen, H. (2013). 'Someone to hold the hand over me': The significance of transpersonal 'attachment' relationships of Danish cancer survivors. *European Journal of Cancer Care*, 22(6), 726-737.
- Bartholomew, K. & Horowitz, L.M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology*, 61, 2, 226-244.
- Bjelland, I., Dahl, A.A., Tangen Haug, T. & Neckelmann, D. (2002). The validity of the Hospital Anxiety and Depression Scale: an updated literature review. *Journal of Psychosomatic Research*, 52, 69-77.
- Bowlby, J. (1969). *Attachment and Loss: Vol 1: Attachment*. New York: Basic Books.
- Bowlby, J. (1988). Developmental psychiatry comes of age. *The American Journal of Psychiatry*, 145, 1-10.
- Brandberg, Y., Kock, E., Oskar, K., Af Trampe, E., Seregard, S. (2000). Psychological reactions and quality of life in patients with posterior uveal melanoma treated with ruthenium plaque therapy or enucleation: A one year follow-up study. *Eye*, 14, 839-846.
- Brédart, A., Kop, J. L., Fiszer, C., Sigal-Zafrani, B., & Dolbeault, S. (2015). Breast cancer survivors' perceived medical communication competence and satisfaction with care at the end of treatment. *Psycho-Oncology*. doi: 10.1002/pon.3836

- Brennan, K. A., Clark, C.L., & Shaver, P.R. (1988). Self-report measurement of adult attachment. In J. A. Simpson, & W.S. Rholes (Eds.). *Attachment theory and close relationships*. (pp. 47-76). New York: Guildford.
- Burkitt-Wright, E., Holcombe, C. & Salmon, P. (2004). Doctors' communication of trust, care, and respect in breast cancer: A qualitative study. *British Medical Journal*, 328-864.
- Calvo, V., Palmieri, A., Marinelli, S., Bianco, F., & Kleinbub, J. R. (2014). Reciprocal empathy and working alliance in terminal oncological illness: The crucial role of patients' attachment style. *Journal of Psychosocial Oncology*, 32(5), 517-534 518p. doi: 10.1080/07347332.2014.936651
- Ciechanowski, P.S., Katon, W.J., Russo, J.E. & Walker, E.A. (2001). The patient-provider relationship: Attachment theory and adherence to treatment in diabetes. *American Journal of Psychiatry*, 158, 29-35.
- Ciechanowski, P.S., Walker, E.A., Katon, W.J. & Russo, J.E. (2002). Attachment theory: A model for health care utilization and somatization. *Psychosomatic Medicine*, 64, 660-667.
- Clark, L., Beesley, H., Holcombe, C & Salmon, P. (2011). The influence of childhood abuse and adult attachment style on clinical relationships in breast cancer care. *General Hospital Psychiatry*, 33, 579–586.
- Damato, B., Eleuteri, A., Fisher, A. C., Coupland, S. E., & Taktak, A. F. G. (2008). Original article: artificial neural networks estimating survival probability after treatment of choroidal melanoma. *Ophthalmology*, 115, 1598-1607. doi: 10.1016/j.ophtha.2008.01.032
- Damato, B., & Heimann, H. (2013). Personalized treatment of uveal melanoma. *Eye*, 27(2), 172-179 178p. doi: 10.1038/eye.2012.242

- Eye Cancer [Webpage] (2015). Retrieved from <http://www.macmillan.org.uk/information-and-support/eye-cancer-ocular-melanoma/index.html#tcm:9-260114>
- Fallowfield, L.J., Hall, A., Maguire, G.P. & Baum, M. (1990). Psychological outcomes of different treatment policies in women with early breast cancer outside a clinical trial. *British Medical Journal*, *301*, 575-580.
- Fraley, R.C. & Shaver, P.R. (1997). Adult attachment and the suppression of unwanted thoughts. *Journal of Personality and Social Psychology*, *73*, 1080–1091.
- Fonagy, P., Steele, M., Steele, H., Moran, G. S., & Higgitt, A. C. (1991). The capacity for understanding mental states: The reflective self in parent and child and its significance for security of attachment. *Infant Mental Health Journal*, *12*(3), 201-218.
- Fritz, M.S. & MacKinnon, D.P. (2007). Required sample size to detect the mediated effect. *Psychological Science*, *18*, 3, 233-239.
- Griffin, D. & Bartholomew, K. (1994). Models of the self and other: Fundamental dimensions underlying measures of adult attachment. *Journal of Personality and Social Psychology*, *67*, 3, 430-445.
- Hammerlid, E., Ahlner-Elmqvist, M., Bjordal, K., Biörklund, A., Evensen, J., Boysen, M., . . . Westin, T. (1999). A prospective multicentre study in Sweden and Norway of mental distress and psychiatric morbidity in head and neck cancer patients. *British Journal of Cancer*, *80*(5-6), 766.
- Harding, R., Beesley, H., Holcombe, C., Fisher, J., & Salmon, P. (2015). Are patient–nurse relationships in breast cancer linked to adult attachment style? *Journal of Advanced Nursing*, *71*(10), 2305-2314. doi: 10.1111/jan.12693

- Hazan, C., & Shaver, P. R. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology*, *52*, 511-524.
- Hill, J., Murray, L., Woodall, P., Parmar, B., Hentges, F. (2004). Recalled relationships with parents and perceptions of professional support in mothers of infants treated for cleft lip. *Attachment & Human Development*, *6*, 21-30.
- Hinnen, C., Pool, G., Holwerda, N., Sprangers, M., Sanderman, R., & Hagedoorn, M. (2014). Lower levels of trust in one's physician is associated with more distress over time in more anxiously attached individuals with cancer. *General Hospital Psychiatry*, *36*(4), 382-387 386p. doi: 10.1016/j.genhosppsy.2014.03.005
- Holland, J.C., Kash, K.M., Passik, S., Gronert, M.K., Sison, A., Lederberg, M., Russak, S.M., Baider, L. & Fox, B. (1998). A brief spiritual beliefs inventory for use in quality of life research in life-threatening illness. *Psycho-Oncology*, *7*, 460-469.
- Holwerda, N., Sanderman, R., Pool, G., Hinnen, C., Langendijk, J. A., Bemelman, W. A., . . . Sprangers, M. A. G. (2013). Do patients trust their physician? The role of attachment style in the patient-physician relationship within one year after a cancer diagnosis. *Acta Oncologica*, *52*(1), 110-117 118p. doi: 10.3109/0284186x.2012.689856
- Hope-Stone, L., Brown, S. L., Heimann, H., Damato, B., & Salmon, P. (2015). How do patients with uveal melanoma experience and manage uncertainty? A qualitative study. *Psycho-Oncology*, *24*(11), 1485-1491 1487p. doi: 10.1002/pon.3813
- Huerta, C., & Rodríguez, L. G. (2001). Incidence of ocular melanoma in the general population and in glaucoma patients. *Journal of epidemiology and community health*, *55*(5), 338-339.

- Hulbert-Williams, N.J., Hulbert-Williams, L., Morrison, V., Neal, R.D. & Wilkinson, C. (2012). The Mini-Mental Adjustment to Cancer scale: re-analysis of its psychometric properties in a sample of 160 mixed cancer patients. *Psycho-Oncology*, *21*, 792–797.
- Hunter, J. J., & Maunder, R. G. (2001). Using attachment theory to understand illness behavior. *General Hospital Psychiatry*, *23*(4), 177-182. doi: 10.1016/s0163-8343(01)00141-4
- Isaksson, J., Salander, P., Granström, B., & Laurell, G. (2014). Critical incidents reveal how patients with head and neck cancer construct their “secure base” as a “helping system”. *Journal of Psychosocial Oncology*, *32*(3), 322-341.
- Jones, P., Marshall, E. & Young, A. (2014). *Sharing good practice: acute oncology*. Macmillan Cancer Support. Retrieved from http://www.macmillan.org.uk/documents/aboutus/health_professionals/macvoice/sharinggoodpracticeacuteoncology.pdf
- Kujala, E., Kivelä, T., & Mäkitie, T. (2003). Very long-term prognosis of patients with malignant uveal melanoma. *Investigative Ophthalmology and Visual Science*, *44*(11), 4651-4659. doi: 10.1167/iovs.03-053
- Lilliehorn, S., Hamberg, K., Kero, A., & Salander, P. (2010). 'Admission into a helping plan': a watershed between positive and negative experiences in breast cancer. *Psycho-Oncology*, *19*(8), 806-813 808p. doi: 10.1002/pon.1619
- Linden, W., Vodermaier, A., MacKenzie, R., & Greig, D. (2012). Anxiety and depression after cancer diagnosis: Prevalence rates by cancer type, gender, and age. *Journal of Affective Disorders*, *141*(2–3), 343-351. doi: <http://dx.doi.org/10.1016/j.jad.2012.03.025>
- Lomax, R. G., & Hahs-Vaughn, D. L. (2013). *An introduction to statistical concepts*. New York: Routledge.

- Mikulincer, M., Shaver, P. R., & Pereg, D. (2003). Attachment theory and affect regulation: The dynamics, development, and cognitive consequences of attachment-related strategies. *Motivation and emotion, 27*(2), 77-102.
- Mikulincer, M., & Shaver, P. R. (2007). *Attachment in adulthood: structure, dynamics, and change*. New York: Guilford Press.
- Moorey, S., Greer, S., Watson, M., Gorman, C., Rowden, L., Tunmore, R., Robertson, B. & Bliss, J. (1991). The factor structure and factor stability of the Hospital Anxiety and Depression Scale in patients with cancer. *British Journal of Psychiatry, 158*, 255–259.
- Ognibene, T.C. & Collins, N.L. (1998). Adult attachment styles: perceived support and coping strategies. *Journal of Social and Personal Relationships, 15*, 323-345.
- Pegman, S., Beesley, H., Holcombe, C., Mendick, M. & Salmon, P. (2011). Patients’ sense of relationship with breast cancer surgeons: The relative importance of surgeon and patient variability and the influence of patients’ attachment style. *Patient Education and Counseling, 83*, 125-138.
- Porcerelli, J. H., Bornstein, R. F., Porcerelli, D., & Arterbery, V. E. (2015). The complex role of personality in cancer treatment: impact of dependency-detachment on health status, distress, and physician-patient relationship. *Journal of Nervous and Mental Disease, 203*(4), 264-268. doi: 10.1097/nmd.0000000000000276
- Preacher, K.J., Hayes, A.F. (2008). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, 40*, 879–891.
- Reis, S. & Grenyer, B.F.S. (2002). Pathways to anaclitic and introjective depression. *Psychology and Psychotherapy Theory Research and Practice, 75*, 445–459.
- Rodin, G., Walsh, A., Zimmermann, C., Gagliese, L., Jones, J., Shepherd, F. A., . . . Mikulincer, M. (2007). The contribution of attachment security and social support to depressive

- symptoms in patients with metastatic cancer. *Psycho-Oncology*, 16(12), 1080-1091
1012p.
- Salandar, P. & Henriksson, R. (2005). Severely diseased lung cancer patients narrate the importance of being included in a helping relationship. *Lung Cancer*, 50, 155-162.
- Salmon, P., Holcombe, C., Clark, L., Crespi, R., Fisher, J. & Hill, J. (2007). Relationships with clinical staff after a diagnosis of breast cancer are associated with patients' experience of care and abuse in childhood. *Journal of Psychosomatic Research*, 63, 3, 255-262.
- Salmon, P. & Young, B. (2009). Dependence and caring in clinical communication: The relevance of attachment and other theories. *Patient Education and Counselling*, 74, 331-338.
- Scharfe, E. & Bartholomew, K. (1994). Reliability and stability of adult attachment patterns. *Personal Relationships*, 1, 23-43.
- Schmitt, D.P, Diniz, G., Alcalay, L., Durkin, K., Allensworth, M., Echegaray, M.,.....(2004). Patterns and universals of adult romantic attachment across 62 cultural regions-Are models of self and of other pancultural constructs? *Journal of Cross-Cultural Psychology*, 35, 367-402.
- Schmidt, S., Nachtigall, C., Wuethrich-Martone, O., & Strauss, B. (2002). Attachment and coping with chronic disease. *Journal of Psychosomatic Research*, 53(3), 763-773. doi: [http://dx.doi.org/10.1016/S0022-3999\(02\)00335-5](http://dx.doi.org/10.1016/S0022-3999(02)00335-5)
- Shaver, P. R., & Hazan, C. (1993). Adult romantic attachment: theory and evidence. *Advances in personal relationships*, 4, 29-70.
- Sherbourne, C.D. & Stewart, A.L. (1991). The MOS Social Support Survey. *Social Science and Medicine*, 32, 6, 705-714.

- Singh, A. D., Turell, M. E., & Topham, A. K. (2011). Original article: Uveal melanoma: trends in incidence, treatment, and survival. *Ophthalmology*, *118*, 1881-1885. doi: 10.1016/j.ophtha.2011.01.040
- Slade, A. (1999). Attachment theory and research: Implications for the theory, and practice of individual psychotherapy with adults. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of Attachment: Theory, Research and Clinical Implications* (pp. p. 575–594). New York: Guilford Press.
- Smith, A. E. M., Msetfi, R. M., & Golding, L. (2010). Client self-rated adult attachment patterns and the therapeutic alliance: A systematic review. *Clinical Psychology Review*, *30*(3), 326-337. doi: <http://dx.doi.org/10.1016/j.cpr.2009.12.007>
- Vodermaier, A., Linden, W., & Siu, C. (2009). Screening for emotional distress in cancer patients: A systematic review of assessment instruments. *Journal of the National Cancer Institute*, *101*(21), 1464-1488.
- Watson, M., Greer, S., Rowden, L., Gorman, C., Robertson, B., Bliss, J. M., & Tunmore, R. (1991). Relationships between emotional control, adjustment to cancer and depression and anxiety in breast cancer patients. *Psychological Medicine*, *21*(01), 51-57.
- Watson, M., Greer, S., Young, J., Inayat, Q., Burgess, C., & Robertson, B. (1988). Development of a questionnaire measure of adjustment to cancer: The MAC scale. *Psychological Medicine*, *18*(01), 203-209.
- Watson, M., Law, M., dos Santos, M., Greer, S., Baruch, J. & Bliss, J. (1994). The Mini-MAC: Further development of the Mental Adjustment to Cancer Scale. *Journal of Psychosocial Oncology*, *12*, 33-46.
- Zhao, X., Lynch, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research*, *37*(2), 197-206.

Zigmond, A.S. & Snaith, R.P. (1983). The Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica*, 67, 6, 361-70.

Appendices

Appendix A

'Health Psychology Review' instructions for authors

General guidelines

- Manuscripts are accepted in English. British English spelling and punctuation are preferred. Please use single quotation marks, except where 'a quotation is "within" a quotation'. Long quotations of 40 words or more should be indented without quotation marks.
- The editorial team acknowledge that review articles are usually longer than empirical articles. However, it is also recognised that articles should be concise and pithy so that the main focus of the article is not lost and the argument is not encumbered by unnecessary detail. Articles to *Health Psychology Review* should therefore be no longer than 30 double-spaced manuscript pages in length with 2.4cm margins (minimum) including abstract, main text, references, footnotes, figures and tables. Authors can include additional figures and tables not directly germane to the main argument of the manuscript as online supplemental materials. For meta-analyses and systematic reviews, references for studies included in the review should be only appear in a separate supplemental list that the journal will make available as an online supplement. These materials will not count toward the page length of the manuscript, but will be included as a permanent record of supplemental materials alongside the online version of the manuscript (see later). Manuscripts should be compiled in the following order: title page; abstract; keywords; main text; acknowledgements; references; appendices (as appropriate); table(s) with caption(s) (on individual pages); figure caption(s) (as a list).
- Abstracts of 200 words are required for all manuscripts submitted.
- Each manuscript should have 3 to 6 keywords.
- Search engine optimization (SEO) is a means of making your article more visible to anyone who might be looking for it. Please consult our guidance [here](#).
- Section headings should be concise.
- All authors of a manuscript should include their full names, affiliations, postal addresses, telephone numbers and email addresses on the cover page of the manuscript. One author should be identified as the corresponding author. Please give the affiliation where the research was conducted. If any of the named co-authors moves affiliation during the peer review process, the new affiliation can be given as a footnote. Please note that no changes to affiliation can be made after the manuscript is accepted. Please note that the email address of the corresponding

author will normally be displayed in the article PDF (depending on the journal style) and the online article.

- For all manuscripts non-discriminatory language is mandatory. Sexist or racist terms must not be used.
- Authors must adhere to SI units. Units are not italicised.
- When using a word which is or is asserted to be a proprietary term or trade mark, authors must use the symbol ® or TM.

Style guidelines

Font: Times New Roman, 12 point. Use margins of at least 2.5 cm (1 inch).

Title: Use bold for your article title, with an initial capital letter for any proper nouns.

Authors' names: Give the names of all contributing authors on the title page exactly as you wish them to appear in the published article.

Affiliations: List the affiliation of each author (department, university, city, country).

Correspondence details: Please provide an institutional email address for the corresponding author. Full postal details are also needed by the publisher, but will not necessarily be published.

Anonymity for peer review: Ensure your identity and that of your co-authors is not revealed in the text of your article or in your manuscript files when submitting the manuscript for review.

Abstract: Indicate the abstract paragraph with a heading or by reducing the font size. Advice on writing abstracts is available here.

Keywords: Please provide five or six keywords to help readers find your article. Advice on selecting suitable keywords is available here.

Headings: Please indicate the level of the section headings in your article:

- First-level headings (e.g. Introduction, Conclusion) should be in bold, with an initial capital letter for any proper nouns.
- Second-level headings should be in bold italics, with an initial capital letter for any proper nouns.
- Third-level headings should be in italics, with an initial capital letter for any proper nouns.
- Fourth-level headings should also be in italics, at the beginning of a paragraph. The text follows immediately after a full stop (full point) or other punctuation mark.

Tables and figures: Indicate in the text where the tables and figures should appear, for example by inserting [Table 1 near here]. The actual tables and figures should be supplied either at the

end of the text or in a separate file as requested by the Editor. Ensure you have permission to use any figures you are reproducing from another source.

References: APA (American Psychological Association) references are widely used in the social sciences, education, engineering and business. For detailed information, please see the Publication Manual of the American Psychological Association, 6th edition, <http://www.apastyle.org/> and <http://blog.apastyle.org/>.

Appendix B

‘Psychology and Health’ instructions for authors

General guidelines

- Manuscripts are accepted in English. British English spelling and punctuation are preferred. Please use single quotation marks, except where ‘a quotation is “within” a quotation’. Long quotations of 40 words or more should be indented without quotation marks.
- A typical manuscript will not exceed 30 pages including tables, references, captions and endnotes. Manuscripts that greatly exceed this will be critically reviewed with respect to length. Authors should include a word count with their manuscript.
- Manuscripts should be compiled in the following order: title page; abstract; keywords; main text; acknowledgements; references; appendices (as appropriate); table(s) with caption(s) (on individual pages); figure caption(s) (as a list).
- Structured abstracts of 200 words are required for all manuscripts submitted. Primary headings should be: Objective, Design, Main Outcome Measures, Results, Conclusion.
- Each manuscript should have 3 to 6 keywords.
- Search engine optimization (SEO) is a means of making your article more visible to anyone who might be looking for it. Please consult our guidance [here](#).
- Section headings should be concise.
- All authors of a manuscript should include their full names, affiliations, postal addresses, telephone numbers and email addresses on the cover page of the manuscript. One author should be identified as the corresponding author. Please give the affiliation where the research was conducted. If any of the named co-authors moves affiliation during the peer review process, the new affiliation can be given as a footnote. Please note that no changes to affiliation can be made after the manuscript is accepted. Please note that the email address of the corresponding author will normally be displayed in the article PDF (depending on the journal style) and the online article.
- For all manuscripts non-discriminatory language is mandatory. Sexist or racist terms must not be used.
- Authors must adhere to SI units. Units are not italicised.
- When using a word which is or is asserted to be a proprietary term or trade mark, authors must use the symbol ® or TM.
- Reports of statistical tests should include an indication of effect size whenever possible. Reports of randomised controlled trials should state any registration details of the trial and

should follow CONSORT guidelines where relevant (see Moher, D., Schulz, K.F. & Altman, D.G. for the CONSORT group, 2001. The CONSORT statement: Revised recommendations for improving the quality of reports of parallel-group randomized trials. *Annals of Internal Medicine*, 134, 657-662).

Style guidelines

Font: Times New Roman, 12 point. Use margins of at least 2.5 cm (1 inch).

Title: Use bold for your article title, with an initial capital letter for any proper nouns.

Authors' names: Give the names of all contributing authors on the title page exactly as you wish them to appear in the published article.

Affiliations: List the affiliation of each author (department, university, city, country).

Correspondence details: Please provide an institutional email address for the corresponding author. Full postal details are also needed by the publisher, but will not necessarily be published.

Anonymity for peer review: Ensure your identity and that of your co-authors is not revealed in the text of your article or in your manuscript files when submitting the manuscript for review.

Abstract: Indicate the abstract paragraph with a heading or by reducing the font size. Advice on writing abstracts is available here.

Keywords: Please provide five or six keywords to help readers find your article. Advice on selecting suitable keywords is available here.

Headings: Please indicate the level of the section headings in your article:

- First-level headings (e.g. Introduction, Conclusion) should be in bold, with an initial capital letter for any proper nouns.
- Second-level headings should be in bold italics, with an initial capital letter for any proper nouns.
- Third-level headings should be in italics, with an initial capital letter for any proper nouns.
- Fourth-level headings should also be in italics, at the beginning of a paragraph. The text follows immediately after a full stop (full point) or other punctuation mark.

Tables and figures: Indicate in the text where the tables and figures should appear, for example by inserting [Table 1 near here]. The actual tables and figures should be supplied either at the end of the text or in a separate file as requested by the Editor. Ensure you have permission to use any figures you are reproducing from another source.

References: APA (American Psychological Association) references are widely used in the social sciences, education, engineering and business. For detailed information, please see the

Publication Manual of the American Psychological Association, 6th edition,
<http://www.apastyle.org/> and <http://blog.apastyle.org/>.

Appendix C

Quality assessment of included studies

Study reference Author, Year, Country.	Selection bias					Study design	Confounders		Data collection		Withdrawals and dropouts		Analyses		
	Recruitment process described?	Target population defined?	Representative of target population?	Participation rate of selected individuals reported?	Characteristics of participants described?	Study design appropriate?	Confounding factors identified?	Confounding factors controlled for by design, stratification or analysis?	Validity of measures?	Reliability of measures?	Withdrawals and dropouts reported?	% Participants completing study reported?	Statistical analyses appropriate?	Adjusted for differences?	Accounted for missing data?
Bredart et al., 2015. (France).	Yes	Yes	S/L	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	C/T
Calvo et al., 2014. (Italy).	No	Yes	C/T	No	Yes	Yes	No	No	No	Yes	No	No	Yes	No	C/T
Clark et al., 2011. (UK).	Yes	Yes	S/L	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	C/T
Harding et al., 2015. (UK).	No	Yes	C/T	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	C/T
Hillen et al., 2014. (Netherlands).	No	Yes	C/T	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hinnen et al., 2014. (Netherlands).	No	Yes	C/T	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	C/T
Holwerda et al., 2013. (Netherlands).	No	Yes	C/T	Yes	Yes	No	Yes	S/L	Yes	Yes	Yes	Yes	Yes	Yes	C/T
Pegman et al., 2011. (UK).	No	Yes	C/T	Yes	Yes	Yes	S/L	S/L	No	Yes	Yes	Yes	Yes	S/L	C/T
Porcerelli et al., 2015. (USA).	No	Yes	C/T	No	Yes	S/L	No	No	Yes	Yes	No	No	No	No	C/T

Note. V/L "Very likely"; S/L "Somewhat likely"; N/L "Not likely"; C/T "Can't tell"

Appendix D

Doctorate of Clinical Psychology Research Review Committee Approval



D.Clin.Psychology Programme
Division of Clinical Psychology
Whelan Building, Quadrangle
Brownlow Hill
LIVERPOOL
L69 3GB

Tel: 0151 794 5530/5534/5877
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1st September 2014

Emma Forde
Clinical Psychology Trainee
Doctorate of Clinical Psychology Doctorate Programme
University of Liverpool
L69 3GB

RE: What is the role of adult attachment style in causing and maintaining distress after diagnosis of ocular melanoma?

Trainee: Emma Forde

Supervisors: Steve Brown, Peter Salmon

Dear Emma,

Thank you for your response to the reviewers' comments of your research proposal submitted to the D.Clin.Psychol. Research Review Committee (letter dated 28/07/14).

I can now confirm that your amended proposal (Version 2, date 28/07/14) and revised budget (Version 2, dated 28/07/14) meet the requirements of the committee and have been approved by the Committee Chair.

Please take this Chairs Action decision as **final** approval from the committee.

You may now progress to the next stages of your research.

I wish you well with your research project.

A handwritten signature in black ink, appearing to be 'Catrin Eames'.

Dr Catrin Eames
Vice-Chair D.Clin.Psychol. Research Review Committee.

A member of the
Russell Group

Professor John Read
Programme Director
readj@liv.ac.uk

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Clinical Director
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Mrs Sue Knight
Programme Co-ordinator
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Appendix E

University Sponsorship Approval Letter



Dr Steve Brown
Department of Psychological
Sciences,
University of Liverpool,
L31 3BX

Mr Alex Astor
Head of Liverpool Joint Research
Office

University of Liverpool
Research Support Office
2nd Floor Block D Waterhouse
Building
3 Brownlow Street
Liverpool
L69 3GL

02 February 2015

Tel: 0151 794 8739
Email: sponsor@liv.ac.uk

Sponsor Ref: UoL001110

Re: Sponsorship Approval

“What is the role of attachment in distress after diagnosis and treatment of ocular melanoma?”

Dear Dr Brown

After consideration at the JRO Non Interventional Sponsorship Sub Committee on 6th January 2015 and the submission of further information following the Intention to Sponsor letter, I am pleased to confirm that the University of Liverpool is prepared to act as Sponsor under the Department of Health’s Research Governance Framework for Health and Social Care 2nd Edition (2005) for the above study.

The following documents have been received by the Joint Research Office

Document title	Version	Date
Protocol	2	26/01/2015

Please note this letter does **NOT** allow you to commence recruitment to your study.

A letter detailing Sponsor Permission to Proceed will be issued when governance and regulatory requirements have been met. Please see Appendix 1 to this letter for further information and a list of the documents required.

If you have not already applied for regulatory approvals through IRAS you may now do so at <https://www.myresearchproject.org.uk/Home.aspx>.

In order to meet the requirements of the Research Governance Framework 2nd Ed 2005, the University requires you to agree to the following Chief Investigator responsibilities:

1. Comply with the Research Governance Framework 2nd Ed 2005 and all relevant legislation, including but not limited to the Data Protection Act 1998, the Mental Capacity Act 2005 and the Human Tissue Act 2004;

2. Inform the Research Support Office as soon as possible of any SAE's;
3. Approval must be gained from the Research Support Office for any amendments to, or changes of status in the study prior to submission to REC and any other regulatory authorities;
4. It is a requirement that Annual Progress Reports are sent to the NHS Research Ethics Committee (REC) following Favourable Ethical Approval. You must provide copies of any reports submitted to REC and other regulatory authorities to the Research Support Office;
5. Maintain the study master file;
6. Make available for review any study documentation when requested by the sponsors and regulatory authorities;
7. Upon the completion of the study it is a requirement to submit and an End of Study Declaration and End of Study Report to REC. You must provide copies of this to the Research Support Office;

The University also requires you to comply with the following:

1. University professional indemnity and clinical trials insurances will apply to the study as appropriate. This is on the assumption that no part of the clinical trial will take place outside of the UK. If you wish to conduct any part of the study in a site outside the UK or you wish to sub-contract any part of the study to a third party specific approvals and consideration of appropriate indemnity would be required;

If you have any queries regarding the sponsorship of the study or the above conditions please do not hesitate to contact the Joint Research Office governance team on 0151 794 8373 (email sponsor@liv.ac.uk).

Yours sincerely



Mr Alex Astor
Head of Liverpool Joint Research Office

Appendix F

Research Ethics Committee Approval letter

22 April 2015

Dr Steve Brown
Institute of Psychology Health and Society
Dept of Psychological Sciences, Whelan building
University of Liverpool Brownlow Hill Liverpool
L69 3GB

Dear Dr Brown

Study title: **Is attachment style related to distress in ocular melanoma patients and is this relationship mediated by the quality of their relationships with clinicians?**

REC reference:

Protocol number:

IRAS project ID:

Thank you for your email of 21 April. I can confirm the REC has received the documents listed below and that these comply with the approval conditions detailed in our letter dated 07 April 2015

Documents received

The documents received were as follows:

<i>Document</i>	<i>Version</i>	<i>Date</i>
Participant consent form	2	14 April 2015
Validated questionnaire		

Approved documents

The final list of approved documentation for the study is therefore as follows:

<i>Document</i>	<i>Version</i>	<i>Date</i>
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [University of Liverpool Insurance Cover - Marsh]	1	01 August 2014
Letter from sponsor [UoL001110 Sponsor Approval Letter 2_2_15 LHM]		02 February 2015
Letters of invitation to participant [Is attachment style related to distress in ocular melanoma patients and is this relationship	2	27 February 2015

mediated by the quality of their relationships with clinicians? Invitation Letter]		
Participant consent form	2	14 April 2015
Participant information sheet (PIS) [Is attachment style related to distress in ocular melanoma patients and is this relationship mediated by the quality of their relationships with clinicians? Participant Information Sheet]	2	27 February 2015
REC Application Form [REC_Form_22032015]		22 March 2015
Referee's report or other scientific critique report [University of Liverpool Doctorate of Clinical Psychology Research Review Approval]	1	01 September 2014
Research protocol or project proposal	3	27 February 2015
Summary CV for Chief Investigator (CI) [Stephen Brown CV]		
Summary CV for student [Emma Forde CV]		
Summary CV for supervisor (student research) [Laura Hope-Stone]		06 March 2015
Summary CV for supervisor (student research) [Peter Salmon]		
Validated questionnaire [Is attachment style related to distress in ocular melanoma patients and is this relationship mediated by the quality of their relationships with clinicians? Participant Questionnaire Set]	3	14 April 2015

You should ensure that the sponsor has a copy of the final documentation for the study. It is the sponsor's responsibility to ensure that the documentation is made available to R&D offices at all participating sites.

Please quote this number on all correspondence

Yours sincerely

REC Manager

E-mail: r

Copy to:

Appendix G

Trust Approval letter

TRUST APPROVAL LETTER FOR NON-CTIMP STUDIES

Dr Stephen Brown
University of Liverpool
Institute of Psychology Sciences
Faculty of Health and Life Sciences
Liverpool
L69 3BX

Date: 20/07/2015

Dear Dr Brown

The above study is a Non-Commercial, Questionnaire / Quantitative study, sponsored by the University of Liverpool and with no external funding. The Trust is now happy for you to commence work on this study, using the following ethically approved documents.

Document	Version	Dated
Letters of invitation to participant [Is attachment style related to distress in ocular melanoma patients and is this relationship mediated by the quality of their relationships with clinician? Invitation Letter]	2	27 February 2015
Participant consent form	2	14 April 2015
Participant Information Sheet (PIS) [Is attachment style related to distress in ocular melanoma patients and is this relationship mediated by the quality of their relationships with clinicians? Participant Information Sheet]	2	27 February 2015
Research protocol or project proposal	3	27 February 2015
Validated questionnaire [Is attachment style related to distress in ocular melanoma patients and is this relationship mediated by the quality of their relationships with clinicians? Participant Questionnaire Set]	3	14 April 2015

May I to take this opportunity to remind you of your responsibilities as PI for this study to:-

- Report SAE's as per protocol and Trust policy and record total number on OSIRIS

- Ensure that all screening and recruitment activity is updated on OSIRIS every Friday (training can be obtained if required by phoning Ext. 3320)
 - Department of Health target for this study is first patient recruited by **28 September 2015**
 - Please provide a timely response to requests for information regarding achievement of this target
- For Trust sponsored studies, provide RD&I with copies of regulatory annual progress and safety reports to Ethics
- Complete and return the RD&I annual report form in a timely manner
- Comply with the Research Governance Framework 2nd Ed 2005 including but not limited to the Medicines for Human use (Clinical Trials) 2004 act plus it's appendices and the Data Protection Act 1998
- Read, disseminate to research team and acknowledge to RD&I, Trust research SOP announcements (details of relevant SOP's can be found at http://staffintranet/departments_and_services/corporate_services/research_and_development/documents/documents.aspx)
- Inform RD&I of any amendments to, or changes of status in, the study.
- Ensure any conditions to approval stipulated by the MHRA/ REC have been addressed prior to implementation of approved changes
- Maintain the study site file (if not provided by the sponsor a template is available on the Trust intranet)
- Provide copies of publications

Investigators who do not comply with the above will be dealt with in accordance with the Trust Disciplinary policy and/or will have their research stopped.

I wish you every success with your research. Please contact the RD&I Department if you require any advice on the above points.

Yours sincerely



>

cc Head of Directorate
University of Liverpool

Appendix H



Participant Information Sheet

Title of Study: Is attachment style related to distress in ocular melanoma patients and is this relationship mediated by the quality of their relationships with clinicians?

You are being invited to take part in a research study. It is up to you to decide whether you would like to take part in this study. Before you decide whether you would like to take part or not, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear, or if you would like more information. Thank you for reading this.

What is the study for?

This research is about people's relationships with clinicians after being diagnosed with, and treated for, ocular melanoma. Research has shown that good clinical relationships are important in reducing distress in patients with cancer, and patients who feel that they have good relationships with their clinicians may have a better experience of treatment than people who do not feel that they have a good a relationship with their clinicians. We want to discover the factors that affect people's relationships with their clinicians. We hope that the findings of this research study might give us more information about what it is like to be supported by a cancer treatment team and this might help us to improve

the care and support that the medical team give to patients with ocular melanoma in the future.

Who is doing the study and who has approved it?

The study is being carried out by a team from the University of Liverpool. It has been approved by the XXXX Research Ethics Committee.

Why have I been chosen to take part?

We are inviting patients who live in the UK and are over 18 years old, who have been diagnosed and treated for ocular melanoma in the past six months to take part.

Do I have to take part in the study?

No. It is up to you to decide whether or not to take part. If you decide to take part then we will ask you to sign a consent form. However, you will still be free to withdraw at any time without giving a reason. A decision to withdraw, or a decision not to take part, will not affect you or your treatment in any way.

What will taking part involve?

If you wish to take part we will ask for your permission to contact you by telephone to discuss the study with you. You can give permission for us to contact you by filling in and returning the consent slip attached to the invitation letter, or by telephoning or emailing us using the contact details which are provided in the letter. If you would still like to take part, a consent form, questionnaire and freepost return envelope will be posted to you. The researcher will ask for information about your diagnosis, and treatment history and may check your medical records to confirm this.

The consent form is to confirm that you have checked that the study is right for you and that you are happy to participate. Once you have completed the questionnaires, you will have finished the study. There will be no further questionnaires in the future. The consent form will be kept separately from your questionnaire answers, and we will ask for no other identifying information from you.

Will there be benefits in taking part?

There are no specific benefits from taking part. However, by taking part you will help us to further improve care and support for patients in future.

What are the possible disadvantages in taking part?

The full set of questionnaires will take time to complete (usually about 30 minutes). We ask questions about some of the things that affect your cancer journey and your treatment, and some personal questions about you. You are free to leave the study at any time should you become upset. If any of the questions raise concerns you are advised to contact your GP or the XXXX for support, and/or discuss them with someone you trust. Sometimes, participants in studies like this may communicate information to the researcher which may give the researcher reason to be concerned that they might be experiencing significant distress, or that there may be a risk of harm to them or to someone else. If so, this may be passed on to the psychologist on the XXXX Team.

The following websites may also provide useful information on living with ocular melanoma and on accessing support:

Macmillan Cancer Support

www.macmillan.org.uk;

Cancer Help <http://cancerhelp.cancerresearchuk.org/>

Changing Faces <http://www.changingfaces.org.uk/Home>

What will happen if I want to stop taking part?

You have the right to opt out of the study at any point. Should you wish to do this, please telephone, or reply by mail to Emma Forde to indicate that you do not wish to participate any further (Tel: 0151 706 3817). When the researcher has been informed of your decision to opt-out of the study, your information will be withdrawn from the study and permanently deleted.

What if I am unhappy or there is a problem?

If you wish have any concerns or wish to complain about any aspect of the study, you can approach Emma Forde (Tel: 0151 706 3817 Email: Emma.Forde@liverpool.ac.uk) or Dr. Steve Brown (Tel: 0151 794 5526 Email: slbrown@liverpool.ac.uk). If still not satisfied, you can contact the Research Governance Officer (0151 794 8290 or ethics@liv.ac.uk).

Will my information be kept confidential?

Yes. All responses will be anonymised, so no one will know your identity or anything that you have said. Any information which identifies you (for example, your contact details) will be stored separately from questionnaire data. Your responses will be viewed only by the researchers involved in the study. All information collected for this research project will be kept safely and securely on a password-protected computer for 10 years in a central file store in line with University of Liverpool policy. Access to data by genuine

researchers not involved in the current study may be permitted but their access to data will be subject to further ethical review.

What will happen to the results of this study?

The results will be written up for a doctoral thesis in Clinical Psychology and will be shared with staff at XXXX. They may also be written up for publication in academic journals. You will not be individually identifiable from these publications. If you wish, we will be happy to send you a summary of what we have found by email at the end of the study in July 2016.

Who can I contact for further information?

Emma Forde (Trainee Clinical Psychologist) (Tel: 0151 706 3817) or Dr. Steve Brown (Tel: 0151 794 5526 Email: slbrown@liverpool.ac.uk).

Thank you for taking the time to read this information. Please keep this information for future reference.

Emma Forde. Trainee Clinical Psychologist, University of Liverpool.

Dr Steve Brown. University of Liverpool.

Professor Peter Salmon. University of Liverpool.

Laura Hope-Stone. University of Liverpool.

Appendix I



CONSENT FORM

Title of Project: Is attachment style related to distress in ocular melanoma patients and is this relationship mediated by the quality of their relationships with clinicians?

Name of Researcher: Emma Forde

Please initial the boxes if you agree with the statements:

1. I confirm that I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my care or legal rights being affected.

3. I understand that my responses will be anonymised and my contact details will be stored separately. My anonymized responses will be viewed only by the researchers involved in the study and all information collected for the study will be kept safely and securely on a password-protected computer for 10 years in line with University of Liverpool policy. Access to data by researchers not involved in the current study will be subject to further ethical review.

4. I consent for the researcher to consult my clinical records for information about my diagnosis and treatment history.

5. I agree to take part in the above study.

6. I understand that data collected from the study may be looked at by regulatory authorities or by persons from the Trust where it is relevant to my taking part in this study. I give permission for these individuals to have access to this information.

Name of Participant

Date

Signature

Appendix J

Fritz and MacKinnon (2007) Empirical estimates of sample sizes needed for .8 power reproduced from K.J. Preacher and A.F. Hayes (2008) "SPSS and SAS procedures for estimating indirect effects in simple mediation models." Behavior Research Methods, 40, 879–891.

Test	Condition															
	SS	SH	SM	SL	HS	HH	HM	HL	MS	MH	MM	ML	LS	LH	LM	LL
BK ($\tau' = 0$)	20,886	6,323	3039	1561	6070	1830	883	445	2682	820	397	204	1184	364	175	92
BK ($\tau' = .14$)	562	445	427	414	444	224	179	153	425	178	118	88	411	147	84	53
BK ($\tau' = .39$)	531	403	402	403	405	158	124	119	405	125	75	59	405	122	60	38
BK ($\tau' = .59$)	530	404	402	403	406	158	124	120	405	125	74	58	404	122	59	36
Joint significance	530	402	403	403	407	159	124	120	405	125	74	58	405	122	59	36
Sobel	667	450	422	412	450	196	144	127	421	145	90	66	410	129	67	42
PRODCLIN	539	402	401	402	402	161	125	120	404	124	74	57	404	121	58	35
Percentile bootstrap	558	412	406	398	414	162	126	122	404	124	78	59	401	123	59	36
Bias-corrected bootstrap	462	377	400	385	368	148	115	118	391	116	71	53	396	115	54	34

Note. All sample sizes have been rounded up to the next whole number. In the condition labels, the first letter refers to the size of the α path, and the second letter refers to the size of the β path; S = 0.14, H = 0.26, M = 0.39, and L = 0.59 (e.g., condition SM is the condition with $\alpha = 0.14$ and $\beta = 0.39$). All results, except for those for Baron and Kenny's (1986) test (BK), have been collapsed across τ' conditions.

Appendix K

Oneway ANOVA HADS anxiety and HADS depression and questions about professional support and attachment styles by education

Source		<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
FinalSecureZ	Between Groups	2	6.12	3.06	1.06	0.35
	Within Groups	55	158.97	2.89		
	Total	57	165.08			
FinalDismissingZ	Between Groups	2	1.16	0.58	0.21	0.81
	Within Groups	55	148.757	2.70		
	Total	57	149.918			
FinalPreoccZ	Between Groups	2	8.76	4.38	1.48	0.24
	Within Groups	55	163.112	2.97		
	Total	57	171.872			
FinalFearfulZ	Between Groups	2	0.64	0.32	0.10	0.90
	Within Groups	55	179.308	3.26		
	Total	57	179.947			
QPScons	Between Groups	2	4.39	2.19	1.02	0.37
	Within Groups	55	118.6	2.16		
	Total	57	122.983			
QPSnurse	Between Groups	2	5.03	2.51	1.09	0.34
	Within Groups	55	126.354	2.30		
	Total	57	131.379			

HADSANX	Between Groups	2	26.64	13.32	0.86	0.43
	Within Groups	55	851.435	15.48		
	Total	57	878.077			
HADSDEP	Between Groups	2	10.40	5.20	0.44	0.65
	Within Groups	55	655.621	11.92		
	Total	57	666.017			

Appendix L

Breakdown of treatments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Enucleation	9	15.0	15.3	15.3
	Enucleation at home	4	6.7	6.8	22.0
	Plaque radiotherapy	21	35.0	35.6	57.6
	PB radiotherapy	20	33.3	33.9	91.5
	Resection and plaque radiotherapy	1	1.7	1.7	93.2
	Mitomycin C	1	1.7	1.7	94.9
	Resection/excision	1	1.7	1.7	96.6
	Observation	1	1.7	1.7	98.3
	Declined treatment	1	1.7	1.7	100.0
	Total	59	98.3	100.0	
Missing	System	1	1.7		
Total		60	100.0		

Appendix M

Output Summary HADS anxiety, secure attachment and perceptions of clinical relationships

Dependent, Independent, and Proposed Mediator Variables:						
DV = HADSANX						
IV = FinalSec						
MEDS = QPScons						
QPSnurse						
Statistical Controls:						
CONTROL= Helpless						
AnxPreoc						
IV to Mediators (a paths)						
	Coeff	se	t	p		
QPScons	.1497	.1052	1.4226	.1604		
QPSnurse	.2415	.1026	2.3531	.0222		
Direct Effects of Mediators on DV (b paths)						
	Coeff	se	t	p		
QPScons	-.0955	.2639	-.3621	.7187		
QPSnurse	.4620	.2706	1.7073	.0935		
Total Effect of IV on DV (c path)						
	Coeff	se	t	p		
FinalSec	-.2335	.1932	-1.2087	.2319		
Direct Effect of IV on DV (c-prime path)						
	Coeff	se	t	p		
FinalSec	-.3308	.2012	-1.6441	.1060		
Partial Effect of Control Variables on DV						
	Coeff	se	t	p		
Helpless	3.8249	1.0980	3.4836	.0010		
AnxPreoc	2.9763	.6290	4.7316	.0000		
Model Summary for DV Model						
	R-sq	Adj R-sq	F	df1	df2	p
	.6469	.6142	19.7875	5.0000	54.0000	.0000

BOOTSTRAP RESULTS FOR INDIRECT EFFECTS						
Indirect Effects of IV on DV through Proposed Mediators (ab paths)						
	Data	boot	Bias	SE		
TOTAL	.0973	.1010	.0037	.0765		
QPScons	-.0143	-.0068	.0075	.0495		
QPSnurse	.1116	.1078	-.0038	.0772		
Bias Corrected and Accelerated Confidence Intervals						
	Lower	Upper				
TOTAL	-.0117	.2920				
QPScons	-.1479	.0531				
QPSnurse	.0075	.3156				
Level of Confidence for Confidence Intervals: 95						
Number of Bootstrap Resamples: 1000						

Appendix N

Output Summary HADS depression, secure attachment and perceptions of clinical relationships

Dependent, Independent, and Proposed Mediator Variables:						
DV = HADSDEP						
IV = FinalSec						
MEDS = QPScons						
QPSnurse						
Statistical Controls:						
CONTROL= Helpless						
AnxPreoc						
IV to Mediators (a paths)						
	Coeff	se	t	p		
QPScons	.1497	.1052	1.4226	.1604		
QPSnurse	.2415	.1026	2.3531	.0222		
Direct Effects of Mediators on DV (b paths)						
	Coeff	se	t	p		
QPScons	-.3767	.2771	-1.3596	.1796		
QPSnurse	-.3456	.2841	-1.2163	.2292		
Total Effect of IV on DV (c path)						
	Coeff	se	t	p		
FinalSec	-.5732	.2071	-2.7678	.0076		
Direct Effect of IV on DV (c-prime path)						
	Coeff	se	t	p		
FinalSec	-.4333	.2112	-2.0514	.0451		
Partial Effect of Control Variables on DV						
	Coeff	se	t	p		
Helpless	3.2057	1.1530	2.7803	.0075		
AnxPreoc	.2738	.6605	.4146	.6801		
Model Summary for DV Model						
	R-sq	Adj R-sq	F	df1	df2	p
	.4950	.4482	10.5860	5.0000	54.0000	.0000

BOOTSTRAP RESULTS FOR INDIRECT EFFECTS						
Indirect Effects of IV on DV through Proposed Mediators (ab paths)						
	Data	boot	Bias	SE		
TOTAL	-.1399	-.1464	-.0066	.1227		
QPScons	-.0564	-.0657	-.0093	.0761		
QPSnurse	-.0835	-.0807	.0027	.0931		
Bias Corrected and Accelerated Confidence Intervals						
	Lower	Upper				
TOTAL	-.5435	.0155				
QPScons	-.3356	.0101				
QPSnurse	-.4459	.0212				

Level of Confidence for Confidence Intervals: 95						
Number of Bootstrap Resamples: 1000						