THE UNIVERSITY OF HULL

Emotional intelligence, coping, distress and wellbeing in women experiencing subfertility

being a thesis submitted for the Degree of Doctor of Clinical Psychology

in the University of Hull

by

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BSc (Hons) Psychology

June 2011

Acknowledgements

Firstly, I would like to thank my academic supervisor, Dr Lesley Glover, for her wisdom, guidance and support throughout this process. I have really valued your considered feedback and the engaging discussions it has prompted. My gratitude goes also to Dr Eric Gardiner, who provided advice on the statistical aspects of this project.

I would like to thank my field supervisor, Professor Stephen Killick, for his assistance in setting up data collection, and for his general enthusiasm for research. It was fascinating to hear your take on fertility-related issues and to converse with you about psychological concepts.

Thanks also to the administrative and nursing staff at the clinic, especially Mandy, Glyn and Cath. Thank you for being so welcoming, letting me drink your tea and coffee, and for letting me take up your office space every week for months on end! I am also very grateful for your willingness to help, even during a busy clinic.

I will be eternally grateful to the patients who took part in this research; without your contributions, there would be no study to report.

Lastly, thank you to David and to my friends, family and course-mates past and present, for your encouragement when times were tough. You helped to ensure that any doubts or worries never stayed around for long.

Overview

This portfolio thesis has three parts.

Part one is a systematic literature review examining the theoretical, conceptual and empirical literature regarding the relationships between coping styles and distress in infertility.

Part two is an empirical paper exploring the relationships between emotional intelligence, coping styles and distress in women attending a subfertility clinic.

Part three comprises the appendices.

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PART ONE: SYSTEMATIC LITERATURE REVIEW

Do coping styles relate to distress among women experiencing infertility? If so, how? A systematic review.

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June 2011

This paper is written in the format ready for submission to the British Journal of Health Psychology. Please see Appendix C for the Guideline for Authors.

Words: 6653 (excluding tables and references)

Do coping styles relate to distress among women experiencing infertility? If so, how? A systematic review.

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Abstract

Purpose: Infertility occurs in around 10% of couples in which the woman is of reproductive age (American Society for Reproductive Medicine, 1998). Women experiencing infertility and its treatment may also experience distress and use a variety of methods to cope. The 'goodness of fit' hypothesis suggests that where a stressor is uncontrollable, as in many aspects of infertility, problem-focused and avoidance coping will be less effective for reducing distress than emotion-focused and problem-appraisal coping (Terry & Hynes, 1998). This systematic review aimed to examine the evidence concerning which types of coping have been associated with lower distress among patients at different stages of infertility assessment and treatment, and the extent to which the 'goodness of fit' hypothesis fits the data.

Methods: Web of Science, PsycINFO, MedLine, PsychARTICLES and Scopus were searched. Thirteen studies met the criteria for inclusion in the review.

Results: Although no clear, systematic differences among stages were found, there was stronger evidence for the detrimental effect of avoidance and escape coping across all stages than for the beneficial effect of emotion-focused and meaning-based styles.

Conclusions: The 'goodness if fit' hypothesis was generally supported. The implications of these findings are discussed along with recommendations for further research.

Key words: Infertility, coping, distress.

Introduction

The relationship between infertility and psychological factors has long been subject to investigation. The basis of research in this area has moved from infertility being viewed as potentially psychogenic in origin; an idea which has now been discredited (Greil, 1997), to attempts to highlight its social context and social construction (Greil, Slauson-Blevins, & McQuillan, 2010). The social context and construction of infertility are relevant because they can have important implications for the behavioural, cognitive and affective reactions of individuals and their social networks to infertility, and greatly affect psychological outcomes such as distress (Greil, Slauson-Blevins, & McQuillan, 2010). Much of the recent research has examined various psychosocial factors as contributors to infertility-related distress or as outcomes of infertility or its treatment.

Infertility is defined as the inability to conceive with twelve months of regular, unprotected sexual intercourse. Interventions, including those involving Assisted Reproductive Technologies (ART) such as in vitro fertilisation (IVF) and intra-cytoplasmic sperm injection (ICSI), are now widely available (IVF Worldwide) . However, not everyone who experiences infertility seeks medical assistance (Stephen & Chandra, 2000).

It has been demonstrated that infertility itself, and also its treatment, can be stressful for individuals (Abbey, Halman, & Andrews, 1992).Some studies have found higher levels of distress amongst women experiencing infertility compared with those in the general population, but this finding is by no means consistent (Dunkel-Schetter & Lobel, 1991; Wright, Allard, Lecours, & Sabourin, 1989). Evidence does suggest, however, that women more often experience negative psychosocial outcomes than men. Greil (1997) asserts that women experience more depression, lower self-esteem and lower life satisfaction than men.

There is also evidence to suggest that women tend to employ more coping strategies to a greater extent than men. For example, women seek more social support and use more self-control coping and escape-avoidance coping (Hsu & Kuo, 2002). Some recent studies have examined the extent of concordance in coping styles within couples and the interaction effects between various combinations of styles. For example, Peterson, Pirritano, Christensen, & Schmidt (2008) found that a partner's use of active-avoidance coping was associated with greater personal, marital and social distress in the other partner. 'Coping' itself can be defined as the efforts an individual makes to deal with a stressor (Lazarus & Folkman, 1984). Many attempts have been made to define coping and to measure it systematically; however, to date there has been little consistency among studies in terms of the way in which coping has been considered (Skinner, Edge, Altman, & Sherwood, 2003). This is perhaps not surprising, considering that some coping strategies, such as seeking social support, may encompass behaviours which are not necessarily instances of coping, such as talking to others about the problem, but may simply reflect lower levels of distress (because the individual may be more able to talk about the problem without becoming highly emotionally aroused). In addition, even when behaviours have been successfully determined to be part of coping attempts, the 'functions' of these have not always been clearly differentiated from their 'outcomes.' This is to say that the purpose for which a strategy is employed may be different from the effect that that strategy actually has.

The earliest of attempts to delineate coping distinguished between 'emotion-focused' and 'problem-focused' strategies (Lazarus & Folkman, 1984). Another attempt subdivided emotion-focused coping into emotional approach and emotional avoidance, as these aspects of emotion-focused coping appeared to be inversely related (Stanton, Danoff-Burg, Cameron, & Ellis, 1994). Still further categorisation approaches have

emphasised the mode of coping (cognitive or behavioural) and whether it is 'active' or 'passive'.

In the context of stressful life events, both cross-sectional and longitudinal studies have found that problem-focused coping is more effective than emotion-focused coping for reducing distress (e.g. Aldwin & Revenson, 1987; Billings & Moos, 1981; Dunkel-Schetter, Feinstein, Taylor, & Falke, 1992). However, it was posited by Forsythe and Compas (1987) that emotion-focused coping may be more appropriate and effective than problem-focused coping when the stressor is uncontrollable. This is known as the 'goodness of fit' hypothesis. It was supported in a study (Terry & Hynes, 1998) investigating women's coping in relation to a failed IVF attempt, considered a 'low-control stressor'. Problem-appraisal coping (a type of cognitive approach coping) and emotional approach coping were found to be more effective for reducing distress than either problem-management (behavioural approach) or escapist (emotional avoidance) strategies.

No systematic review has yet examined whether this finding is consistent among similar studies of infertility, nor has any review investigated whether different types of coping may be more or less helpful at different stages of assessment and treatment of infertility, which could involve different levels of control. If there are reliable differences in how coping styles relate to distress at different stages, this could be an important consideration for clinicians attempting to intervene to reduce distress in this patient population.

Aims

The aims of the present study were firstly to investigate which coping styles are associated with lower levels of distress at different stages of infertility assessment and

treatment, and, secondly, to investigate whether the 'goodness of fit' hypothesis, as developed by Terry and Hynes (1998), is supported in studies of these various stages.

Method

Search strategy

A systematic search using online databases was carried out. The databases were: Web of Science, PsycINFO, MedLine, PsychARTICLES and Scopus. These were selected on the basis of their psychological research content. The search terms used were: 'infertility' OR 'subfertility' OR 'fertility problem#' OR 'fertility difficult#' AND 'coping' AND 'wellbeing' OR 'distress' OR 'psychological health' OR 'adjustment.' These terms were expected to constitute a sufficiently sensitive and specific enquiry to detect relevant articles for the review. Figure 1, below, illustrates the process. Initial searches were carried out to verify the relevance of the articles produced and to establish appropriate inclusion and exclusion criteria. No limits were set for date of publication of included studies, since there were no obvious grounds for excluding studies on this basis. Articles had to be published in English, in peer-reviewed journals, and had to have infertility (or similar terms) in the title or as a major subject heading. Additional inclusion and exclusion criteria were devised following initial searching and are given below.

Inclusion criteria

- female participants (results must have been clearly distinguished from males' if both were involved, to allow examination of data from females only for the purpose of the review)
- at least one measure of coping and at least one of distress used (since these are pertinent to the subject of the review)

- correlation analysis of coping style and distress (if no correlation has been conducted, then the study would not be addressing the review question)

Exclusion criteria

- review article (only original articles can provide suitable data for inclusion in the review)
- conference proceedings (the relevant original articles were sought in place of these, as these supply more detailed data)
- studies which only examined concordance between male and female participants' coping styles, rather than separate analyses of male and female styles, since the former would not allow data from only the females to be examined for the purpose of the review
- quality of life used as the only measure relating to distress, as quality of life encompasses additional factors other than just distress
- studies investigating infertility in survivors of cancer as this group of patients was expected to differ from other patients with fertility problems in important ways (for example, they may have known in advance that they might have fertility problems and/or might have had eggs frozen in preparation).

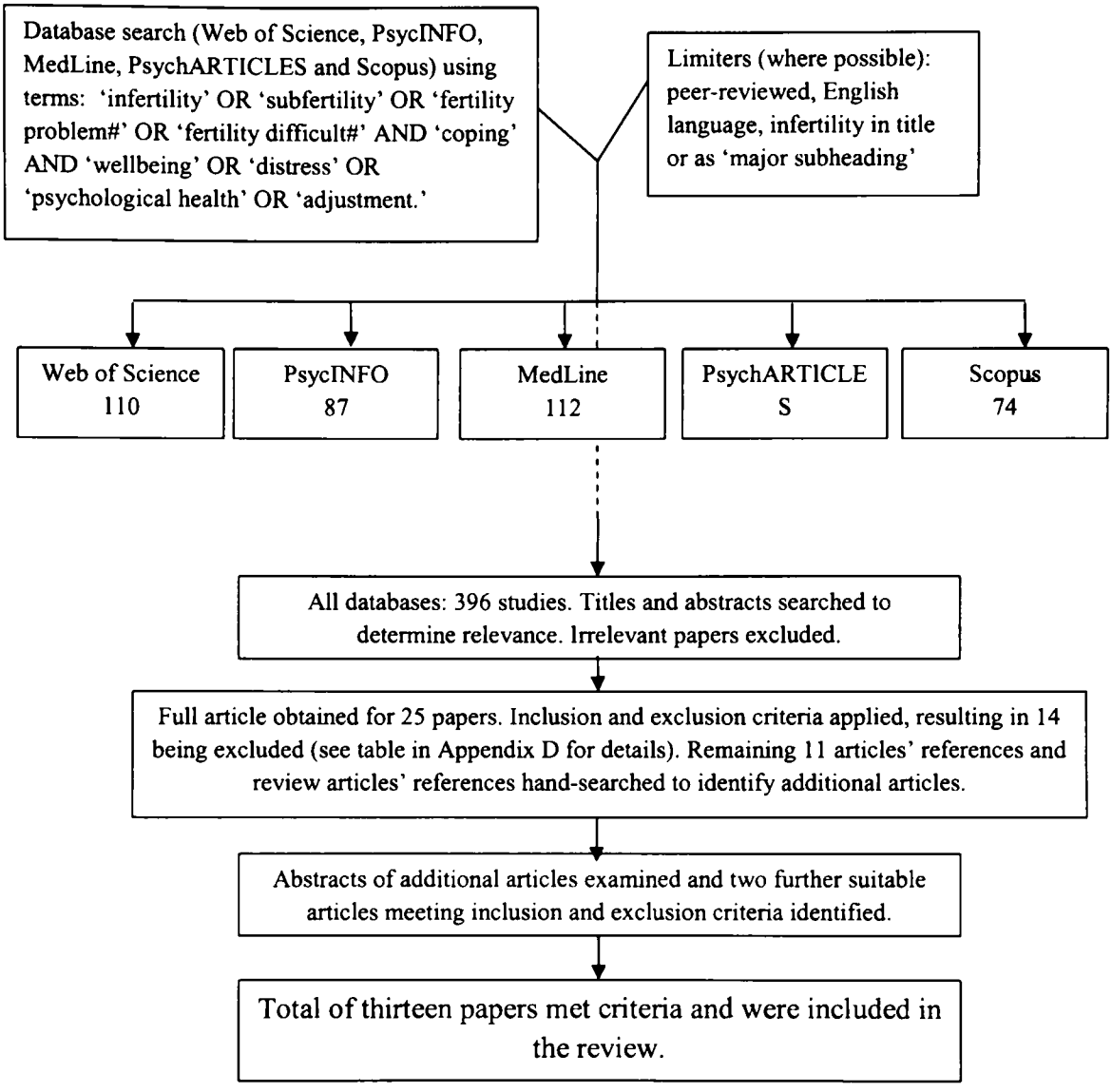
Details of included and excluded studies

A total of 1413 studies were identified using the initial search terms, of which 396 studies were in English, in peer-reviewed journals and had infertility (or similar term) in the title or as a major subject heading. After examining the titles and abstracts of these studies, the full reference was obtained for 25 studies. Of these, eleven articles

met all inclusion and exclusion criteria. The reference lists of these articles were then examined for any further relevant articles and a further two articles were identified.

Several relevant review articles were found (Callan & Hennessey, 1989; Deltsidou & Lykeridou, 2007; Greil, 1997; Greil et al., 2010; Schmidt, 2009; Stanton, Lobel, Sears, & DeLuca, 2002). Although they were not included in the present review, the references from these were hand-searched for further articles. One review appeared from the title to be very similar to the present study (Deltsidou & Lykeridou, 2007). However; on closer examination, the review was not systematic and appeared to address wider aspects of coping rather than focussing specifically on the impact of different coping styles on distress. The other reviews were carried out long ago (Callan & Hennessey, 1989; Greil, 1997) were not systematic (Schmidt, 2009) and/or did not focus on coping styles in infertility in detail (Greil, 1997; Stanton et al., 2002). See Appendix D ('Table of excluded studies'), for details of reasons for all exclusions of studies.

Figure 1- Study selection process



Quality assessment

According to NICE (2009), no quality checklist is suitable for all systematic reviews. The present study employed a modified version of the Downs and Black (1998) checklist using only the items deemed relevant by the researcher. This checklist and further details regarding its development can be found in Appendix E. Studies were not intended to be excluded on the basis of the quality assessment; this was rather a tool for

providing more detailed information about the studies for the purpose of the review. Table 1 (below) provides the quality ratings awarded for each study; for ease of comparison, the raw scores have been converted to star ratings of one, two or three stars.

Data synthesis

Due to the heterogeneity of the included studies, quantitative analysis was not deemed appropriate, therefore data were synthesised qualitatively.

Results

Thirteen studies fulfilled the requirements of the inclusion and exclusion criteria (Bayley, Slade, & Lashen, 2009; Benyamini et al., 2008; Berghuis & Stanton, 2002; Hsu & Kuo, 2002; Hynes, Callan, Terry, & Gallois, 1992; Litt, Tennen, Affleck, & Klock, 1992; Morrow, Thoreson, & Penney, 1995; Peterson, Newton, Rosen, & Skaggs, 2006; Peterson, Pirritano, Christensen, & Schmidt, 2008; Schmidt, Holstein, Christensen, & Boivin, 2005; Stanton, Tennen, Affleck, & Mendola, 1992; Terry & Hynes, 1998; Verhaak et al., 2005). The main study characteristics are outlined in Table 2 (below).

Quality overview of included studies

The methodological quality of studies was assessed only in relation to the outcomes of interest. This is because many of the studies included comparisons relating to factors which were not pertinent to this review, such as gender or attachment style, and it did not appear appropriate to assess studies on the basis of analyses not relevant to this review. All studies attained a minimum rating of two stars on the quality checklist (see Table 1, below), indicating that all studies were of good or at least reasonable quality.

Description of studies

Sample size

Many of the studies included both men and women, however only the data from the women in such samples will be commented on in the present review. Sample sizes of women ranged from 36 (Litt et al., 1992) to 1169 (Peterson et al., 2008). Mean ages of participants ranged from 30.4 (Hsu & Kuo, 2002) to 34.3 years (Verhaak et al., 2005). Some studies gave information on employment, education and relationship status. Participants were generally in employment (67-92% employed on any basis). Participants were generally educated to at least high school level. Proportions of participants who had education beyond high school level ranged from 34% (Hsu & Kuo, 2002) to 74.5% (Bayley, Slade & Lashen, 2009). In studies which gave information on relationship status, all or most participants tended to be married, for an average of 5 years (Benyamini et al., 2008) to 9 years (Hynes, Callan, Terry & Gallois, 1992).

Stage of assessment/treatment

Three studies were of patients attending clinics for assessment (Bayley et al., 2009; Morrow et al., 1995; Stanton et al., 1992), three studies were of patients about to undergo treatment (Hsu & Kuo, 2002; Peterson et al., 2006; Peterson et al., 2008) one study was of a mixture of before and during treatment (Benyamini et al., 2008) and six studies were in relation to an unsuccessful treatment cycle (Berghuis & Stanton, 2002; Hynes et al., 1992; Litt et al., 1992; Morrow et al., 1995; Schmidt et al., 2005; Terry & Hynes, 1998; Verhaak et al., 2005). Of the studies where patients were about to have or having treatment, or had an unsuccessful treatment cycle, four studies pertained specifically to IVF (Hynes et al., 1992; Litt et al., 1992; Peterson et al., 2006; Terry & Hynes, 1998); one to Artificial Insemination with a Donor (AID, Berghuis & Stanton,

2002) and five involved mixed ART (Benyamini et al., 2008; Hsu & Kuo, 2002; Peterson et al., 2008; Schmidt et al., 2005; Verhaak et al., 2005).

Design

Seven studies were cross-sectional (Bayley et al., 2009; Benyamini et al., 2008; Hsu & Kuo, 2002; Morrow et al., 1995; Peterson et al., 2008; Stanton et al., 1992) and six were longitudinal (Berghuis & Stanton, 2002; Hynes et al., 1992; Peterson et al., 2006; Schmidt et al., 2005; Terry & Hynes, 1998; Verhaak et al., 2005). All longitudinal studies controlled for pre-treatment distress in their analysis. Table 3 provides details of time-points of measurement and analyses carried out.

Coping measures

One study used the Utrecht Coping List (Schreurs, Tellegen, & Vanderwillige, 1984); (Verhaak et al., 2005), four used the Ways of Coping Questionnaire (Folkman & Lazarus, 1985); (Hsu & Kuo, 2002; Litt et al., 1992; Peterson et al., 2006; Stanton et al., 1992) three used the Ways Of Coping- Revised infertility-specific version (Felton, Revenson, & Hinrichsen, 1984); (Bayley et al., 2009; Morrow et al., 1995; Peterson et al., 2008), one used the Coping Orientations to Problem Experiences (COPE, Carver, Scheier, & Weintraub, 1989b); (Berghuis & Stanton, 2002) and four used composite scales created by them for the purpose of the study (Benyamini et al., 2008; Hynes et al., 1992; Schmidt et al., 2005; Terry & Hynes, 1998).

Distress measures

One study used the Brief Symptom Inventory (BSI, Derogatis & Spencer, 1982); (Litt et al., 1992), one study used the Mental Health Inventory (MHI-18, Veit & Ware, 1983); (Bayley et al., 2009), two studies used the Symptom Check List (SCL-90, Derogatis & Cleary, 1977); (Morrow et al., 1995; Stanton et al., 1992), one study used the short form

of the Infertility Specific Wellbeing and Distress Scales (Stanton & Dunkel-Schetter, 1991); two used the Fertility Problem Stress Inventory (Abbey, Andrews, & Halman, 1991); (Peterson et al., 2006; Schmidt et al., 2005), two used the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961); (Berghuis & Stanton, 2002; Terry & Hynes, 1998), one used a depression measure (Mitchell, Cronkite, & Moos, 1983); (Hynes et al., 1992) one used the Profile of Mood States (McNair, Lorr, & Droppleman, 1971); (Hsu & Kuo, 2002) and two used a composite measure (Benyamini et al., 2008; Peterson et al., 2008).

Key findings

The findings will be discussed according to the stage of infertility assessment or treatment that the participants had reached.

Assessment

Three studies; (Bayley et al., 2009; Morrow et al., 1995; Stanton et al., 1992), investigated coping and distress among women at the assessment stage, and there appeared to be reasonable agreement among the results. Stanton, Tennen, Affleck and Mendola (1992) found that women coping through accepting responsibility for their infertility or through escape-avoidance coping were more distressed; those who coped through seeking social support were less distressed. They also found that coping style significantly predicted distress in women.

This result was replicated by Morrow, Thoreson and Penney (1995), who, although they used a revised version of the coping scale, nevertheless found that 'self-blame and avoidance' (SBA) coping (a style produced using their own factor analysis) was the best predictor of distress. Finally, Bayley, Slade and Lashen (2009) used the same coping scale as Morrow, Thoreson and Penney (1995) and the same factors, and found again

that self-blame and avoidance coping was associated with greater distress and lower wellbeing. Additionally, they found a similar pattern for 'information and emotional support seeking' (IES) coping; this was associated with greater distress and lower wellbeing.

Pre-ART

There were three studies which investigated coping and distress among women about to undergo treatment, and there were some conflicting findings among the results. In one of these studies, participants filled in questionnaires approximately two months prior to their pre-treatment appointment, whereas in the other two, questionnaires were filled in directly before treatment.

In the study with the larger time period between participation and treatment (Peterson et al., 2006), almost all the coping processes measured were significantly related to fertility problem stress. Confrontative coping, self-controlling coping, accepting responsibility and escape-avoidance coping were all positively related to fertility problem stress whilst distancing, seeking social support and planful problem solving were negatively related. Only positive reappraisal was not significantly related to fertility problem stress.

In the studies with participation directly before treatment (Hsu & Kuo, 2002; Peterson et al., 2008), one (Hsu & Kuo, 2002) involved a mixture of treatments; Intra-Uterine Insemination and IVF- Embryo Transfer. It was found that exactly the same coping styles were associated with higher distress as in the Peterson, Newton, Rosen and Skaggs (2006) study (confronting coping, self-control coping, accepting responsibility and escape-avoidance). However, the only style associated with lower distress in the Hsu and Kuo (2002) study was positive reappraisal, which is in contrast to the findings

of Peterson, Newton, Rosen and Skaggs (2006) in which positive reappraisal was not significantly related to distress.

In the final study in this category (Peterson et al., 2008), the revised infertility-specific Ways of Coping scale was used whereas in the previous two studies, the standard version had been used. The women in the study participated prior to beginning an unspecified type of treatment attempt. Women who used active-avoidance coping or passive-avoidance coping tended to have higher levels of distress whereas those who used active-confronting coping or meaning-based coping tended to have lower distress levels.

Thus the latter two studies in this category suggest that styles which could be classed as 'emotional approach coping' are associated with lower levels of distress among women about to undergo treatment. However, the study with the longer time period between participation and treatment did not find any significant relationship between positive reappraisal (a type of emotional approach coping) and distress, and instead found that distancing, seeking social support and planful problem solving were associated with lower distress.

Pre-/during treatment

An Israeli questionnaire-development study (Benyamini et al., 2008) was carried out in which most (95%) of the participants were in the process of receiving treatment of some kind, whereas 5% were still at the assessment phase. It was found that self-blame, denial, self-neglect and social withdrawal, hope, compensation, seeking social support and planning and information-seeking all correlated positively with distress. Disclosure and positive reinterpretation correlated negatively with distress.

Following an unsuccessful treatment cycle

Several studies examined coping and distress among women who had had an unsuccessful cycle of treatment. Two of these studies measured distress but not coping prior to the treatment cycle. The women in the first study (Hynes et al., 1992) were specifically undergoing IVF treatment. It was found that, at Time 2 when controlling for depression at Time 1, problem-focused coping was associated with lower depression whereas avoidance coping and seeking social support were associated with higher levels of depression.

In the second of these studies (Terry & Hynes, 1998), IVF was again the type of treatment involved. Data on distress were collected prior to treatment, 1-2 weeks after the discovery or confirmation that the attempt had failed and 6 weeks after this. Coping was measured at the second two time-points only. It was found that escapism (at both time-points) and problem-management strategies (only immediately after the failed attempt) were associated with higher distress at the concurrent time-points whilst problem-appraisal strategies (at both time-points) and emotional approach coping (only at the final time-point) were associated with lower distress at the concurrent time-points.

Other studies of unsuccessful treatment attempts measured coping as a possible predictor of post-attempt distress. Only one of these additionally investigated links between coping and distress concurrently at the time-point *after* the treatment (Berghuis & Stanton, 2002). This study investigated coping and distress in women before treatment and within one week of discovering that their AI attempt had not been successful. Greater distress following the attempt was associated with high use of avoidant coping pre- and post-treatment. Lower distress following the attempt was associated with high use, pre-treatment, of seeking social support. Lower distress

following the attempt was also associated with high use, pre- and post-treatment, of emotional processing and emotional expression.

Another study (Schmidt et al., 2005) used a subset of the participants from the study by Peterson, Pirritano, Christensen, & Schmidt (2008), consisting of only those who did not become pregnant (n=816). Participants' distress and coping were assessed pre-treatment and 12 months later; however, the post-treatment coping data were not included in the analysis in this paper. This study found that higher fertility problem stress was associated with pre-treatment use of active-avoidance coping whereas lower fertility problem stress was associated with pre-treatment meaning-based coping.

In the study by Litt, Tennen, Affleck and Klock (1992), women completed all measures two weeks before an unsuccessful IVF cycle and then were assessed for distress using a different measure, administered by telephone, two weeks after the cycle. Of the coping styles, only escape coping was significantly related to post-treatment distress, and this was in a positive direction.

Finally, in the study by Verhaak et al. (2005), coping was measured before treatment whereas anxiety and depression were measured both before an IVF or ICSI cycle and four weeks after the pregnancy test result. In this study, no significant relationships between coping strategies and change in distress were found.

Discussion

This review has been the first to systematically examine findings from studies investigating coping styles and distress in women experiencing infertility. Thirteen studies were reviewed, with participants in various stages of assessment or treatment.

Key findings

Some findings from the included studies were concordant whereas others were contradictory. There appeared to be some coherence among the results of the studies in which participants were at the assessment phase, with 'self-blame and avoidance coping' and 'escape coping' being consistently associated with greater distress in the three studies. However, 'information and emotional support seeking' and 'seeking social support' were each associated with lower distress in only one of these studies.

In the pre-treatment studies, there was some evidence that active and emotional approach coping styles are associated with lower distress. There was also some evidence that confronting, self-control coping, accepting responsibility and escape-avoidance coping are associated with greater distress.

One study (Benyamini et al., 2008) could not be easily categorised according to the stage of treatment as it included some participants who were still at the assessment phase and others who were undergoing treatments. In this study, it appeared that all coping styles measured were associated with higher distress, with the exception of disclosure and positive reinterpretation which were both associated with lower distress.

Many of the included studies investigated women's responses to a failed cycle of treatment. All of these controlled for pre-treatment distress, but the measurement time-points and analyses conducted differed slightly between studies (see Table 3 for details). There appeared to be some commonalities among the results. With the exception of one study (Verhaak et al., 2005) which found no associations between coping and change in distress, escape and avoidance coping styles were associated with higher distress in all of these studies. There was some evidence that emotional approach styles such as problem-appraisal, emotional processing, emotional expression and meaning-based coping are related to lower distress. There were mixed results for seeking social support

and for problem-focused/problem-management coping as these both correlated positively with distress in one study but negatively in another.

Examining the 'goodness of fit' hypothesis

The 'goodness of fit' hypothesis, as previously mentioned, suggests that whereas problem-focused coping is beneficial in high-control situations, in low-control situations, since there is little benefit in instrumental efforts, emotion-focused coping will be more beneficial and will be more likely to be associated with lower distress. This hypothesis was refined and developed by Terry and Hynes (1998) who distinguished between problem-management and problem-appraisal and between emotional approach and emotional avoidance in their investigation of the goodness of fit hypothesis with women adjusting to a failed IVF attempt. Although these researchers referred specifically to a failed IVF attempt as a 'low-control stressor,' actually the experience of infertility *in general* has been referred to as an uncontrollable stressor (Verhaak et al., 2007). A failed IVF attempt could be considered just one of the many events that might occur within this. Thus the goodness of fit hypothesis might conceivably apply to people at any stage of infertility assessment or treatment. This notion was one of the foci of the present review, and the extent to which it was supported will now be considered.

The testing of this hypothesis was made more difficult by the many and varied ways in which coping styles were categorised among the included studies. For the hypothesis to be most readily investigable, similar distinctions among coping subtypes (i.e. problem appraisal versus problem management and emotional approach versus emotional avoidance) would have needed to be made in included studies, whereas this was not always the case. In some studies, the distinction was not made at all (e.g. Hynes et al.,

1992) whilst in others, the coping styles investigated did not readily map onto the Terry and Hynes (1998) subtypes (e.g. Bayley et al., 2009).

Evidence for and against the 'goodness of fit' hypothesis at different stages

There were many associations between coping styles and distress that supported the goodness of fit hypothesis. Firstly, there appeared to be an association between emotional avoidance (or 'escape') strategies and higher distress for all stages of assessment or treatment, and this was perhaps the most consistent finding from this review.

In addition, some support was found for an association of emotional approach and problem-appraisal strategies with lower distress. 'Meaning-based coping' (Schmidt et al., 2005), 'emotional processing' (Berghuis & Stanton, 2002) and 'positive reinterpretation' (Benyamini et al., 2008) all appeared to refer to similar styles as emotional approach and problem appraisal, and these were all associated with lower distress in studies involving adjustment to unsuccessful treatments. 'Positive reappraisal' was associated with lower distress in one of the pre-treatment studies (Hsu & Kuo, 2002). However, in the assessment stage, there was no evidence of any emotional approach or problem-appraisal strategies being associated with lower distress.

Finally, 'problem-management' appeared to have analogous styles in 'information and emotional support seeking' (Bayley et al., 2009; Hynes et al., 1992, assessment stage), 'confrontative coping' (Hsu & Kuo, 2002; Peterson et al., 2006, both pre-treatment) and 'planning and information seeking,' (Benyamini et al., 2008, post-unsuccessful treatment), all of which had associations with higher distress.

In contrast, the following results refuted the goodness of fit hypothesis. Firstly, 'planful problem-solving' appeared akin to 'problem-management' but was associated with *lower* distress in one study (Peterson et al., 2006), in spite of 'confrontative coping' being associated with higher distress in the same study. Secondly, 'hope' appears similar to problem-appraisal and emotional approach coping but was associated with *higher* distress in one study (Benyamini et al., 2008, post-unsuccessful treatment).

Thus it appears that the modified 'goodness of fit' hypothesis outlined by Terry and Hynes (1998) is broadly supported by the results of this review, though not entirely without exception.

Other issues

The papers reviewed here came from a variety of countries and cultural contexts. The Benyamini et al. (2008) study took place in Israel, the Hsu and Kuo (2002) study was carried out in Taiwan, the Bayley, Slade and Lashen (2009) study took place in the United Kingdom, the Schmidt, Holstein, Christensen, & Boivin (2005) study was done in Denmark, Verhaak et al. (2005) did their study in The Netherlands and finally Peterson, Newton, Rosen and Skaggs (2006), Peterson, Pirritano, Christensen and Schmidt (2008), Terry and Hynes (1998), Morrow, Thoreson and Penney (1995), Hynes, Callan, Terry and Gallois (1992), Berghuis and Stanton (2002), Stanton, Tennen, Affleck and Mendola (1992) and Litt, Tennen, Affleck and Klock (1992) all conducted their studies in the United States. This could have influenced the results in that in some cultures, infertility is associated with a greater degree of shame and voluntary childlessness is very rare (Greil et al., 2010).

For example, Lee and Kuo (2000) report that Chinese traditional attitudes, which emphasise the importance of childbearing, remain highly prevalent in Taiwan, and this could have influenced the results of the Hsu and Kuo (2002) study. The situation is

similar in Israel, which has been described as a very pro-natalist society (Remennick, 2000). This may help to account for the large number of coping strategies significantly associated with distress in the Benyamini et al. (2008) study. In particular, it may account for the finding that 'disclosure' was associated with reduced distress whereas this was either not identified as a coping style in other studies or in some cases, similar styles such as 'seeking social support' were actually associated with greater distress. Perhaps infertile women in this culture experience less stigma, worry or pressure surrounding their childlessness when they explain their fertility problems to others.

Associations of seeking social support with distress were often present but were not consistently in the same direction for any of the stages of infertility included in this review. In the original COPE validation paper, Carver, Scheier and Weintraub (1989b) noted that this subscale correlated with some 'adaptive' styles ('active coping' and 'planning') and some 'maladaptive' styles ('focus on and venting of emotions' and 'mental disengagement'), which made it unique among the subscales. The researchers suggested that the extent to which seeking social support proves to be adaptive might depend on what other coping styles are used alongside it. The fact that different studies in the present review found different associations between seeking social support and distress could therefore be because seeking social support is associated with different sets of *other* coping styles in different studies, perhaps due to cultural or societal differences.

One of the studies (Verhaak et al., 2005) included in the review did not find any associations between coping styles and change in distress over the course of an unsuccessful treatment attempt. It could be suggested that this unique result could be related to the type of analysis conducted, since other studies examined correlations between coping styles and absolute distress scores rather than the change in distress

scores between time-points. However, the other longitudinal studies did control for pre-treatment distress in their analyses, which would minimise any differences in findings compared to those of Verhaak et al. (2005), thus it remains unclear why this study's findings differed from those of similar studies.

Two of the included studies had Fertility Problem Stress as the distress measure (Peterson et al., 2006; Schmidt et al., 2005), rather than a measure of general distress as in the other studies. This could have contributed to the variations among relationships between coping and distress for the stages of infertility that these studies covered (i.e. pre-treatment and following an unsuccessful cycle of treatment).

Methodological limitations of reviewed papers

Most of the studies included in this review had a cross-sectional design and even those that were prospective did not necessarily measure both coping and distress at more than one time-point. Thus most of the results are based on simple correlation analyses and therefore conclusions as to cause and effect cannot be drawn.

A major limitation of any research into coping styles is the lack of consensus as to how they are defined and measured, in either the theoretical, empirical or applied research. Thus it is difficult to compare results across studies even of the same population, as they often have used different coping measures and even when they have used the same measures, the analysis has often been carried out differently (e.g. determining factors via factor analysis rather than using the measure's pre-defined factors from the original development paper or manual). The lack of consensus regarding categorisation and structure of coping styles has been highlighted in the literature (Skinner et al., 2003).

Strengths and limitations of the review

In spite of the inherent difficulty in drawing together results from studies which use disparate measures of the factors of interest (distress and coping style), it does appear possible to draw tentative conclusions about which *types* of coping styles tend to be associated with lower and higher distress levels respectively. Across different measures of coping style, there tend to be similarly-named constructs and even when these do not constitute exactly the same components, when viewing a selection of studies it is possible to observe patterns of association of these with distress which can still be clinically useful.

This review focused solely on studies published in peer-reviewed journals. This suggests that the studies were likely to have been of at least adequate quality; however, there is the possibility of publication bias in the results of the review. This could mean that the associations between the factors of interest are exaggerated in this review compared to in the literature as a whole (published and unpublished).

A final stage of infertility, which none of the included papers covered, is definitive infertility; long-term involuntary childlessness with no further plans for medical intervention. The conclusiveness of this stage would perhaps mean that more individuals would have reached a point of 'acceptance' of their infertility, which might have implications for which coping styles would be associated with distress at this stage. Two papers met most of the criteria for inclusion but did not report results separately for males and females (Kraaij, Garnefski, & Schroevers, 2009; Lechner, Bolman, & van Dalen, 2006) and therefore were excluded. The results from these appeared to be broadly in line with the results from studies of other stages of infertility, but the importance of cognitive rather than behavioural coping was emphasised (Kraaij, Garnefski and Schroevers, 2009).

The review considered only 'distress' in relation to coping but many of the included studies measured additional factors such as marital satisfaction, social support, life satisfaction, illness perceptions, self-confidence, self-esteem, health locus of control, marital stress, social stress, wellbeing and perceived control, although there was little consistency in which additional factors were chosen. These factors could all be of potential interest in relation to distress and coping in infertility but it was beyond the scope of this review to include a detailed analysis of these.

Clinical implications and further research

One of the aims of the review was to begin to examine whether there are any differences in the associations of different coping styles or strategies with distress across different stages of assessment or treatment of infertility. This could be clinically useful to be aware of, as assessing which coping styles women are using may help indicate their level of distress. Alternatively, this knowledge might be used to provide clearer information about coping styles to patients and to identify appropriate interventions, to assist in reducing distress levels in this population.

In this review, the goodness of fit hypothesis was supported, and there appeared to be greater consistency among the styles associated with greater distress than with lower distress. No formal quantitative analysis was conducted; however, in many of the included studies, there were stronger correlations with distress among those coping strategies associated with greater distress than among those associated with lower distress. Therefore there is more, and stronger, evidence of the association between escapist and avoidant strategies with higher distress than of an association between emotional approach and meaning-based strategies with lower distress.

There are many possible interpretations of these findings, which would have different clinical implications. The first possibility is that avoidant, escapist coping styles are indeed universally ineffective for coping with infertility, its assessment and treatment, whereas the strategies which prove effective depend on other factors, such as the individual's perceived control over the situation, their personal characteristics, the quality of their support network and so forth. This would suggest that further research would be needed to explore what particular factors dictate which styles prove to be useful for certain individuals. In a clinical context, in the absence of such further investigation, we can have more confidence in providing information to women about the coping styles which are unlikely to be helpful for reducing distress than about the styles which are likely to be helpful and *why* they are likely to be helpful.

Another possibility is to consider distress levels as predictors of coping strategies rather than the reverse. It could be that women have a greater tendency to use avoidance/escapist strategies the more distressed they become, whereas the coping strategies used by women who are less distressed tend to differ more widely. This could be useful for identifying distress in individuals who would not readily ask for help, since coping style could act as an indirect measure of distress.

A final possible explanation is that more voluminous evidence in relation to avoidance strategies simply reflects the fact that these were the most commonly-considered strategies evaluated in the included studies to begin with. However, this would not account for the stronger correlations between avoidance coping and distress than approach coping styles and distress within individual studies (e.g. Terry & Hynes, 1998).

The 'goodness of fit' hypothesis was designed in relation to actual, rather than perceived, control. This review was prompted in part by a study applying the hypothesis

to a failed attempt at IVF. Although this context and other stages of infertility may indeed involve little actual control on the part of the individuals experiencing it, it would also be interesting to consider the extent to which individuals might *perceive* that they have control. Miller-Campbell, Dunkel-Schetter & Peplau (1991) identified three 'domains' of infertility-specific perceived control: pregnancy, medical treatment and emotional reactions. Perhaps these would all have different implications for coping and distress. This question was unfortunately beyond the scope of this review, but may be a fruitful avenue for future research.

In conclusion, this review was undertaken to investigate whether there is a relationship between coping and distress in women experiencing infertility, to what extent there is consensus between studies in terms of which coping styles are related to lesser and greater distress at different stages of infertility and whether the data support the goodness of fit hypothesis. The results suggest moderate concordance between studies in terms of which coping styles are associated with less distress at the assessment stage and moderate support for the goodness of fit hypothesis.

Table 1- Quality ratings for included studies (*-*).**

Study	Quality rating
(Bayley et al., 2009)	★★
(Peterson et al., 2008)	★★★
(Benyamini et al., 2008)	★★★
(Peterson et al., 2006)	★★★
(Verhaak et al., 2005)	★★★
(Schmidt et al., 2005)	★★★
(Hsu & Kuo, 2002)	★★★
(Berghuis & Stanton, 2002)	★★
(Terry & Hynes, 1998)	★★★
(Morrow et al., 1995)	★★
(Hynes et al., 1992)	★★
(Stanton et al., 1992)	★★★
(Litt et al., 1992)	★★★

Authors	Title	Design	Types of coping	Coping measures	Outcomes	Outcome measures	Results
(Bayley et al., 2009)	Relationships between attachment, appraisal, coping and adjustment in men and women experiencing infertility concerns	cross-sectional study of couples attending initial appointments at fertility clinics (98 women, 64 men)	self-blame avoidance coping, information and emotional support seeking, cognitive restructuring	Ways Of Coping Questionnaire-Revised-infertility specific version (WOC-R-29, Felton et al., 1984)	general wellbeing, depression, anxiety, behavioural control, positive affect, infertility-related distress	Mental Health Inventory (MHI-18, Veit & Ware, 1983), Fertility Problem Inventory (FPI, Newton, Sherrard, & Glavac, 1999)	'self-blame and avoidance coping' and 'information and emotional support seeking' both associated with higher distress and lower wellbeing

2008)	in couples experiencing infertility	women, 1081 men contacted before assisted reproductive treatment	passive -avoidance, meaning-based	Questionnaire-Revised-infertility specific version (WOC-R-29, Peterson et al., 2008)		Stress Inventory (FPI, A. Abbey et al., 1991); 7 items from the Psychosocial Infertility Interview Study (Schmidt, 1996)	avoidance, active-confronting and passive avoidance coping and negatively associated with meaning-based coping
(Benyamini et al., 2008)	Coping specificity: The case of women coping with infertility treatments	measure development study, 652 women undergoing treatment	CICQ formed in this study (Benyamini et al., 2008) (14 strategies collected from CISS, Endler & Parker, 1990), the COPE (C. S. Carver,	(see left)	distress; wellbeing	short form Infertility Specific Wellbeing and Distress Scales (Stanton, 1991)	self-blame, denial, self-neglect, social withdrawal, hope, compensation, seeking social support, planning and information seeking were positively associated with

			& Lazarus, 1985) and measures by (Billings & Moos, 1981) and (Hynes et al., 1992)				associated. disclosure, acceptance, positive re-interpretation, hope, spiritual coping, compensation, investing in self were positively associated with wellbeing; self-blame, denial, self-neglect, social withdrawal were negatively associated with wellbeing
(Peterson et al., 2006)	Gender differences in how men and women who are referred for IVF	cross-sectional study of couples referred for IVF, contacted	confrontative coping, distancing, self-controlling, seeking social support, accepting responsibility,	Ways of Coping Questionnaire (WCQ, Folkman &	infertility stress	Fertility Problem Inventory (FPI, Abbey et al., 1991)	positively associated with infertility stress: confrontative coping, self-controlling, accepting responsibility, escape/avoidance; negatively

		520 women, 506 men	positive reappraisal				solving
(Verhaak et al., 2005)	Predicting emotional response to unsuccessful fertility treatment: A prospective study	longitudinal study of 187 women undergoing IVF or ICSI	active coping, palliative coping, avoidance, seeking social support, passive coping, expression of negative emotions, comforting thoughts	Utrecht Coping List (UCL, Schreurs et al., 1984)	state anxiety and depression	Beck Depression Inventory (BDI, Beck et al., 1961) and the State-Trait Anxiety Inventory (STAI, Spielberger, 1983)	change in distress before treatment and after it proved unsuccessful was not significantly related to coping style
(Schmidt et al., 2005)	Communication and coping as predictors of	longitudinal study of 2250 couples	active-avoidance coping, active-confronting coping,	composite questionnaire from WOCQ,	fertility problem stress	The Fertility Problem Stress Inventory	active-avoidance coping associated with high distress; meaning-based coping

	study of 816 participants who did not achieve a delivery after 12 months of fertility treatment	treatment; 1169 women; 816 couples who did not conceive; 12 month follow-up	coping	meaning-based coping and qualitative interview items			
(Hsu & Kuo, 2002)	Evaluations of emotional reactions and coping behaviors as well as correlated	cross-sectional study of 120 couples attending for IVF or IUI	confronting, distancing, self-control, seeking social support, accepting responsibility, escape-avoidance, planful problem solving, positive reappraisal	Ways of Coping Questionnaire (WCQ, Folkman & Lazarus, 1985)	emotional disturbance	Profile Of Mood States (POMS, McNair et al., 1971)	confronting, self-control, accepting responsibility and escape-avoidance all associated with greater mood disturbance; positive appraisal associated with less mood disturbance

	receiving assisted reproductive technologies						
(Berghuis & Stanton, 2002)	Adjustment to a dyadic stressor: A longitudinal study of coping and depressive symptoms in infertile couples over an insemination attempt	longitudinal study of 43 couples receiving negative results from an insemination attempt	social support-seeking, problem-focused coping, avoidance, positive reinterpretation and growth, religious coping	Coping Orientations to Problem Experiences (COPE, Carver, Scheier, & Weintraub, 1989b)	depression	Beck Depression Inventory (BDI, Beck et al., 1961)	social support seeking, problem-focused or emotion-focused coping protected women from depressive symptoms, along with low avoidant coping

Hynes, 1998)	situation: Re-examining the role of coping responses	women undergoing IVF; follow-up data from 139 women	emotional approach, escapism	Holahan & Moos (1987) and (Lazarus & Folkman, 1984)	and anxiety	Beck et al., 1961) and the State-Trait Anxiety Inventory (STAI, Spielberger, 1983)	with higher distress; problem appraisal and emotional approach coping associated with lower distress
(Morrow et al., 1995)	Predictors of psychological distress among infertility clinic patients	cross-sectional study of 120 women, 86 men, active patients at a University Hospital	self-blame and avoidance, informational and emotional support seeking, cognitive restructuring	derived from Ways of Coping-Revised Scale (Felton et al., 1984)	distress	Global Severity Index from the Symptom Checklist-90 Revised (SCL-90, Derogatis & Cleary, 1977)	'self blame and avoidance coping' was best predictor of higher distress

1992)	well-being of infertile women after a failed IVF attempt- The effects of coping	women undergoing IVF, 73 controls	coping, support-seeking, avoidance coping	Moos (1981) and Holahan & Moos (1987)	self-confidence	Mitchell, Cronkite & Moos (1983)	treatment distress, problem-focused coping was associated with less distress and avoidance coping and seeking social support were associated with more distress
(Stanton et al., 1992)	Coping and adjustment to infertility	cross-sectional study of 96 women and 72 men (couples) identifies as infertile	confronting, distancing, self-control, seeking social support, accepting responsibility, escape-avoidance, planful problem solving, positive reappraisal	Ways of Coping Questionnaire (Folkman & Lazarus, 1985)	distress	Global Severity Index from the Symptom Checklist-90 Revised (Derogatis & Cleary, 1977)	women coping through accepting responsibility or through escape-avoidance were more distressed; those who sought social support were less distressed.
(Litt et	Coping and	cross-sectional	escape, caution,	some subscales	physical and	Brief Symptom	only escape coping significantly

in vitro fertilization failure	had undergone IVF	seeking self-blame, negotiation, seeking meaning	Questionnaire-revised version (WCQ, Lazarus & Folkman, 1984)	Spencer, 1982) pre-treatment then the Depression Adjective Checklist (Lubin, 1965) post-treatment

Table 3- Details of time-points and analyses in included studies

Study	Time 1	Time 2	Time 3	Analysis
(Bayley et al., 2009)	----------cross-sectional----------			
(Peterson et al., 2006)	----------cross-sectional----------			
(Benyamini et al., 2008)	----------cross-sectional----------			
(Hsu & Kuo, 2002)	----------cross-sectional----------			
(Morrow et al., 1995)	----------cross-sectional----------			
(Stanton et al., 1992)	----------cross-sectional----------			
(Peterson et al., 2008)	----------cross-sectional----------			
(Verhaak et al., 2005)	5-10 days before start of medication	4 weeks after pregnancy test	N/A	correlation of coping and change in distress between time-points
(Schmidt et al., 2005)	pre-ART	12 month follow-up	N/A	correlation of coping pre-treatment with distress post-treatment, controlling for pre-treatment distress
(Berghuis & Stanton, 2002)	within 1 week pre-treatment	within 1 week after pregnancy test	N/A	regression of distress post-treatment on pre-treatment distress, then on coping style at both time-points
(Terry & Hynes, 1998)	pre-treatment (exact timing not specified)	1-2 weeks after pregnancy test	6 weeks after T2	regression of T2 and T3 distress on pre-treatment distress and concurrent (i.e. T2 and T3) coping
(Hynes et al., 1992)	pre-treatment (exact timing not specified)	post-treatment (4-6 weeks after T1)	N/A	regression of distress post-treatment on pre-treatment distress and coping post-treatment
(Litt et al., 1992)	10 weeks pre-treatment	1-2 weeks after pregnancy test		regression of distress post-treatment on coping style pre-treatment with pre-treatment distress entered as covariate

References

Retrieved 5/13, 2011, from http://www.ivf-worldwide.com/

Abbey, A., Halman, L. J., & Andrews, F. M. (1992). Psychosocial, treatment, and demographic-predictors of the stress associated with infertility. *Fertility and Sterility, 57*(1), 122-128.

Abbey, A., Andrews, F. M., & Halman, L. J. (1991). Gender's role in responses to infertility. *Psychology of Women Quarterly, 15*(2), 295-316. doi:10.1111/j.1471-6402.1991.tb00798.x

Aldwin, C. M., & Revenson, T. A. (1987). Does coping help - a reexamination of the relation between coping and mental-health. *Journal of Personality and Social Psychology, 53*(2), 337-348. doi:10.1037//0022-3514.53.2.337

Bayley, T. M., Slade, P., & Lashen, H. (2009). Relationships between attachment, appraisal, coping and adjustment in men and women experiencing infertility concerns. *Human Reproduction, 24*(11), 2827-2837. doi:10.1093/humrep/dep235

Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry, 4*, 561-571.

Benyamini, Y., Gefen-Bardarian, Y., Gozlan, M., Tabiv, G., Shiloh, S., & Kokia, E. (2008). Coping specificity: The case of women coping with infertility treatments. *Psychology & Health, 23*(2), 221-241. doi:10.1080/14768320601154706

Berghuis, J. P., & Stanton, A. L. (2002). Adjustment to a dyadic stressor: A longitudinal study of coping and depressive symptoms in infertile couples over an

insemination attempt. *Journal of Consulting and Clinical Psychology, 70*(2), 433-438. doi:10.1037/0022-006X.70.2.433

Billings, A. G., & Moos, R. H. (1981). The role of coping responses and social resources in attenuating the stress of life events. *Journal of Behavioral Medicine, 4*(2), 139-157.

Callan, V. J., & Hennessey, J. F. (1989). Strategies for coping with infertility. *British Journal of Medical Psychology, 62*(4), 343-354.

Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology, 56*(2), 267-283. doi:10.1037/0022-3514.56.2.267

Deltsidou, A., & Lykeridou, K. (2007). Emotional distress and infertility: A review of coping strategies. *Review of Clinical Pharmacology and Pharmacokinetics, International Edition, 21*(3), 285-291.

Derogatis, L. R., & Cleary, P. A. (1977). Confirmation of the dimensional structure of the SCL-90: A study in construct validation *Journal of Clinical Psychology, 33*, 981-989.

Derogatis, L. R., & Spencer, P. M. (1982). *The brief symptom inventory: Administration, scoring and procedure manual-I.* Riderwood, Maryland: Clinical Psychometric Research Incorporation.

Downs, S., & Black, N. (1998). The feasibility of creating a checklist for the assessment of the methodological quality both of randomised and non-randomised studies of

health care interventions. *Journal of Epidemiology and Community Health, 52*(6), 377-384.

Dunkel-Schetter, C., Feinstein, L. G., Taylor, S. E., & Falke, R. L. (1992). Patterns of coping with cancer. *Health Psychology, 11*(2), 79-87. doi:10.1037/0278-6133.11.2.79

Dunkel-Schetter, C., & Lobel, M. (1991). Psychological reactions to infertility. In C. Dunkel-Schetter (Ed.), *Infertility: Perspectives from stress and coping research.* (pp. 29-57). New York, NY US: Plenum Press.

Endler, N. S., & Parker, J. D. (1990). State and trait anxiety, depression and coping styles. *Australian Journal of Psychology, 42*(2), 207-220. doi:10.1080/00049539008260119

Felton, B. J., Revenson, T. A., & Hinrichsen, G. A. (1984). Stress and coping in the explanation of psychological adjustment among chronically ill adults. *Social Science & Medicine, 18*(10), 889-898. doi:10.1016/0277-9536(84)90158-8

Folkman, S., & Lazarus, R. S. (1985). If it changes it must be a process: Study of emotion and coping during three stages of a college examination. *Journal of Personality and Social Psychology, 48*(1), 150-170. doi:10.1037/0022-3514.48.1.150

Forsythe, C. J., & Compas, B. E. (1987). Interaction of cognitive appraisals of stressful events and coping - testing the goodness of fit hypothesis. *Cognitive Therapy and Research, 11*(4), 473-485. doi:10.1007/BF01175357

Greil, A. (1997). Infertility and psychological distress: A critical review of the literature. *Social Science & Medicine, 45*(11), 1679-1704. doi:10.1016/S0277-9536(97)00102-0

Greil, A. L., Slauson-Blevins, K., & McQuillan, J. (2010). The experience of infertility: A review of recent literature. *Sociology of Health & Illness, 32*(1), 140-162. doi:10.1111/j.1467-9566.2009.01213.x

Holahan, C. J., & Moos, R. H. (1987). Personal and contextual determinants of coping strategies. *Journal of Personality and Social Psychology, 52*, 946-955.

Hsu, Y., & Kuo, B. (2002). Evaluations of emotional reactions and coping behaviors as well as correlated factors for infertile couples receiving assisted reproductive technologies. *The Journal of Nursing Research: JNR, 10*(4), 291-302.

Hynes, G. J., Callan, V. J., Terry, D. J., & Gallois, C. (1992). The psychological well-being of infertile women after a failed ivf attempt - the effects of coping. *British Journal of Medical Psychology, 65*, 269-278.

Kraaij, V., Garnefski, N., & Schroevers, M. J. (2009). Coping, goal adjustment, and positive and negative affect in definitive infertility. *Journal of Health Psychology, 14*(1), 18-26. doi:10.1177/1359105308097939

Lazarus, R. S., & Folkman, S. (1984). *Stress appraisal and coping*

Lechner, L., Bolman, C., & van Dalen, A. (2006). Definite infertility: Coping, social support and distress. *Psychology & Health, 21*, 87-88.

Lee, S., & Kuo, B. (2000). Chinese traditional childbearing attitudes and infertile couples in taiwan. *Journal of Nursing Scholarship, 32*(1), 54-54. doi:10.1111/j.1547-5069.2000.00054.x

Litt, M. D., Tennen, H., Affleck, G., & Klock, S. (1992). Coping and cognitive factors in adaptation to in vitro fertilization failure. *Journal of Behavioral Medicine, 15*(2), 171-187. doi:10.1007/BF00848324

Lubin, B. (1965). Adjective checklist for the measurement of depression. *Archives of General Psychiatry, 12*, 57-62.

McNair, D., Lorr, M., & Droppleman, L. (1971). *Manual: Profile of mood states*. San Diego: Educational and Industrial Testing Service.

Miller-Campbell, S., Dunkel-Schetter, C., & Peplau, L. A. (1991). Perceived control and adjustment to infertility among women undergoing in vitro fertilization. In A. L. Stanton, & C. Dunkel-Schetter (Eds.), *Infertility; perspectives from stress and coping research.* (). New York: Plenum.

Mitchell, R. E., Cronkite, R. C., & Moos, R. H. (1983). Stress, coping and depression among married couples. *Journal of Abnormal Psychology, 92*, 433-448.

Morrow, K. A., Thoreson, R. W., & Penney, L. L. (1995). Predictors of psychological distress among infertility clinic patients. *Journal of Consulting and Clinical Psychology, 63*(1), 163-167. doi:10.1037/0022-006X.63.1.163

National Institute of Clinical Excellence. (2009). *The guidelines manual.* Retrieved 6/4, 2011, from http://www.nice.org.uk/media/633/15/The_guidelines_manual_2009_-

_Appendix_C_Methodology_checklist_-_systematic_reviews_and_meta-analyses.pdf

Newton, C., Sherrard, W., & Glavac, I. (1999). The fertility problem inventory: Measuring perceived infertility-related stress. *Fertility and Sterility, 72*(1), 54-62. doi:10.1016/S0015-0282(99)00164-8

Peterson, B. D., Newton, C. R., Rosen, K. H., & Schulman, R. S. (2004). Dyadic coping processes of men and women in infertile couples and their relationship to infertility stress, marital adjustment, and depression. *Fertility and Sterility, 82*, S104-S104.

Peterson, B. D., Newton, C. R., Rosen, K. H., & Skaggs, G. E. (2006). Gender differences in how men and women who are referred for IVF cope with infertility stress. *Human Reproduction, 21*(9), 2443-2449. doi:10.1093/humrep/del145

Peterson, B. D., Pirritano, M., Christensen, U., & Schmidt, L. (2008). The impact of partner coping in couples experiencing infertility. *Human Reproduction, 23*(5), 1128-1137. doi:10.1093/humrep/den067

Remennick, L. (2000). Childless in the land of imperative motherhood: Stigma and coping among infertile israeli women. *Sex Roles, 43*(11-12), 821-841. doi:10.1023/A:1011084821700

Schmidt, L. (1996). *Psychosocial consequences of infertility and treatment.* (PhD, Copenhagen).

Schmidt, L. (2009). Social and psychological consequences of infertility and assisted reproduction - what are the research priorities? *Human Fertility (Cambridge, England), 12*(1), 14-20.

Schmidt, L., Holstein, B. E., Christensen, U., & Boivin, J. (2005). Communication and coping as predictors of fertility problem stress: Cohort study of 816 participants who did not achieve a delivery after 12 months of fertility treatment. *Human Reproduction, 20*(11), 3248-3256. doi:10.1093/humrep/dei193

Schreurs, P. J. G., Tellegen, B., & Vanderwillige, G. (1984). Health, stress and coping - the development of the utrechtse coping scale. *Gedrag-Tijdschrift Voor Psychologie, 12*(1-2), 101-117.

Skinner, E. A., Edge, K., Altman, J., & Sherwood, H. (2003). Searching for the structure of coping: A review and critique of category systems for classifying ways of coping. *Psychological Bulletin, 129*(2), 216-269. doi:10.1037/0033-2909.129.2.216

Spielberger, C. D. (1983). *Manual for the state-trait anxiety scale.* Palo Alto, California: Consulting Psychologists.

Stanton, A. L. (1991). Cognitive appraisals, coping processes, and adjustment to infertility. In C. Dunkel-Schetter (Ed.), *Infertility: Perspectives from stress and coping research.* (pp. 87-108). New York, NY US: Plenum Press.

Stanton, A. L., Danoff-Burg, S., Cameron, C. L., & Ellis, A. P. (1994). Coping through emotional approach: Problems of conceptualizaton and confounding. *Journal of Personality and Social Psychology, 66*(2), 350-362. doi:10.1037/0022-3514.66.2.350

Stanton, A. L., & Dunkel-Schetter, C. (1991). Psychological adjustment to infertility: An overview of conceptual approaches. In C. Dunkel-Schetter (Ed.), *Infertility: Perspectives from stress and coping research.* (pp. 3-16). New York, NY US: Plenum Press.

Stanton, A. L., Lobel, M., Sears, S., & DeLuca, R. S. (2002). Psychosocial aspects of selected issues in women's reproductive health: Current status and future directions. *Journal of Consulting and Clinical Psychology, 70*(3), 751-770. doi:10.1037/0022-006X.70.3.751

Stanton, A. L., Tennen, H., Affleck, G., & Mendola, R. (1992). Coping and adjustment to infertility. *Journal of Social and Clinical Psychology, 11*(1), 1-13.

Stephen, E., & Chandra, A. (2000). Use of infertility services in the united states: 1995. *Family Planning Perspectives, 32*(3), 132-137. doi:10.2307/2648162

Terry, D. J., & Hynes, G. J. (1998). Adjustment to a low-control situation: Reexamining the role of coping responses. *Journal of Personality and Social Psychology, 74*(4), 1078-1092. doi:10.1037/0022-3514.74.4.1078

Veit, C. T., & Ware, J. E. (1983). The structure of psychological distress and well-being in general populations. *Journal of Consulting and Clinical Psychology, 51*(5), 730-742. doi:10.1037/0022-006X.51.5.730

Verhaak, C. M., Smeenk, J. M. J., Evers, A. W. M., Kremer, J. A. M., Kraaimaat, F. W., & Braat, D. D. M. (2007). Women's emotional adjustment to IVF: A systematic review of 25 years of research. *Human Reproduction Update, 13*(1), 27-36. doi:10.1093/humupd/dml040

Verhaak, C. M., Smeenk, J. M. J., Evers, A. W. M., van Minnen, A., Kremer, J. A. M., & Kraaimaat, F. W. (2005). Predicting emotional response to unsuccessful fertility treatment: A prospective study. *Journal of Behavioral Medicine, 28*(2), 181-190. doi:10.1007/s10865-005-3667-0

Wright, J., Allard, M., Lecours, A., & Sabourin, S. (1989). Psychosocial distress and infertility - a review of controlled research. *International Journal of Fertility, 34*(2), 126-142.

PART TWO: EMPIRICAL PAPER

Emotional Intelligence, coping and distress in women attending a subfertility clinic

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June 2011

This paper is written in the format ready for submission to the British Journal of Health Psychology. Please see Appendix C for the Guideline for Authors.

Words: 7003 (excluding tables and references)

Emotional intelligence, coping and distress in women attending a subfertility clinic

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Abstract

Objectives: Infertility can be a difficult, stressful experience. Evidence suggests that women tend to experience more distress than men. However, such distress is not universal. Various interpersonal and intrapersonal factors relate to the effects of infertility on individuals, such as coping style, optimism and self-esteem. Trait emotional intelligence (trait EI) encompasses optimism and self-esteem among other factors, and has been investigated in relation to other health issues. This study aimed to investigate how trait EI, coping and distress are related in women experiencing infertility.

Design: Fifty-four women were recruited from a subfertility clinic in the north of England in an opportunity sample.

Methods: Participants were asked to complete questionnaires enquiring about demographics, their infertility, coping styles, emotional intelligence, distress and general wellbeing.

Results: The results did not support the existence of an association between trait EI and coping or between trait EI and distress in this patient group. However, results

were consistent with previous studies in that avoidant coping was related to higher levels of distress.

Conclusions: Possible reasons for the lack of relationship between trait EI and coping style, and between trait EI and distress, are discussed.

Key words: infertility, coping, distress, emotional intelligence.

Introduction

Infertility is widely known to have various negative psychosocial correlates (Greil, 1997). There is some evidence to suggest that the incidence of psychological symptoms is higher amongst infertile than fertile or pregnant women (Stanton & Danoff-Burg, 1995), and distress is more frequently reported by women than men within infertile couples (e.g. Wright et al., 1991). However, the effect of infertility on individuals appears to vary substantially (Stanton et al., 2002). It has been suggested that this is due to differences in interpersonal and intrapersonal resources and vulnerabilities, which affect people's interpretations and coping capacity (Ensel & Lin, 1991).

Not everyone who experiences infertility seeks treatment. Stephen and Chandra (2000) found that 42% of couples experiencing infertility sought medical treatment in the United States in 1995. In addition, treatments are not always successful and the process of treatment can be stressful in itself (Abbey et al., 1992). Success can decrease levels of psychopathology; however, unsuccessful treatment can lead to a grief reaction which can be disruptive to patients' lives (Greenfeld, Diamond, & Decherney, 1988).

Psychosocial interventions (such as counselling) have been used in a variety of contexts relating to infertility. Aims of such counselling have included psycho-education, stress reduction, accepting the possibility of a life without children and considering other options such as adoption. Interestingly, a recent meta-analysis (Haemmerli, Znoj, & Barth, 2009) of studies of couples not currently receiving Assisted Reproductive Technology (ART) treatment found no significant benefit of infertility-related psychosocial interventions for psychological health, but did find evidence of increased pregnancy rates. A number of explanations were offered for the lack of significant benefit for psychological health. Firstly, it was suggested that it could be due to the short-term nature of the studies and control groups showing similar degrees of

adjustment over their course. It was also noted that the interventions offered were generic rather than individually-tailored. Finally, there was some evidence that longer-term interventions were of more benefit for psychological health than shorter interventions. The authors therefore concluded that the results did not definitively rule out any benefit of such interventions for psychological health.

Coping style is a psychological factor which has been investigated in several studies of couples or individuals experiencing infertility. Coping has been characterised in many different ways (Skinner et al., 2003). Individuals do not generally use one coping strategy or style in all situations, although they may tend to employ some more often than others. One dimension of coping categorisation which has been widely used is approach versus avoidance coping. Approach coping refers to any efforts, practical or emotional, to deal with or confront the stressor whereas avoidance coping refers to efforts to prevent exposure to, or confrontation of, the stressor (Skinner et al., 2003). For the most part, approach-oriented coping has been found to be associated with better psychological adjustment to infertility, whereas avoidance-oriented coping has been related to higher distress (e.g. Berghuis & Stanton, 2002; see Gardner, 2011, unpublished review).

Intrapersonal and interpersonal factors other than coping have also been investigated in relation to psychological wellbeing in infertility. Some socio-demographic factors have been found to relate to better adjustment, such as higher economic status (Koropatnick, Daniluk, & Pattinson, 1993) and having other children already (Newton et al., 1999). Personality factors such as high self-esteem (Koropatnick et al., 1993) and optimism (Litt et al., 1992) also seem to relate to better adjustment. Another study (Mahajan et al., 2009) found that intrapersonal factors, such as attachment style, neuroticism and

perceived internal control, were more important for predicting adjustment to infertility than interpersonal factors such as social support and marital adjustment.

Lancastle and Boivin (2005) examined the predictive power of optimism, trait anxiety and coping and found that these variables combined were a better predictor of reproductive health (i.e. ovarian response to in-vitro fertilisation) than any individual variable. The results support the idea of a single latent construct for predicting reproductive health which encompasses all these variables. If there may be such a construct for predicting *biological* health in infertility, it would seem possible that a similar construct might predict *psychological* health in infertility. This idea seems worthy of investigation.

Trait emotional intelligence (EI) is a construct which includes some of the factors already linked with adjustment to infertility, namely optimism and self-esteem (Petrides & Furnham, 2001). Evidence for the construct validity and discriminant validity of trait EI has been provided by Petrides and Furnham (2001). There is also evidence from behavioural genetic research that trait EI has similar heritability to other personality factors (Vernon, Petrides, Bratko, & Schermer, 2008). Surprisingly, trait EI appears not yet to have been investigated in relation to distress or wellbeing in infertility. It is known to be related to mental health in general (Schutte, Malouff, Thorsteinsson, Bhullar, & Rooke, 2007), and also to adjustment to other health issues including the menopause (Bauld & Brown, 2009). Trait EI is also thought to relate to coping style (Mikolajczak, Petrides, & Hurry, 2009) although there have been relatively few studies linking these constructs.

Emotional intelligence was originally conceptualised by Salovey and Mayer (1989) as an 'ability,' akin to intellectual ability (IQ), comprising perception, understanding, expression and instrumental use of emotions. These researchers devised a measure with

which to investigate it (the Mayer, Salovey and Caruso Emotional Intelliegence Test, MSCEIT, Mayer & Salovey, 1993). Since EI's original conceptualisation, many investigators have considered it not as an 'ability' but as a 'trait'; more like a facet of personality (e.g. Schutte et al., 1998). Trait EI is a wider construct than ability EI as it includes factors which one might expect to be consequent to high ability EI, such as assertiveness, stress management, adaptability and the quality of one's relationships. A wide variety of trait EI (self-report) measures have been produced. Within the research on health and EI, trait EI has received much more attention than ability EI since trait EI has shown a stronger relationship to health. In other words, people's impression of their emotional intelligence appears to be more relevant to health than is their objective emotional ability measured using the MSCEIT (for further details on trait and ability EI, see Appendix O).

Previous evidence suggests a mediating role of coping style between EI and distress/wellbeing. In a study by Bauld and Brown (2009), proactive coping mediated the relationship between EI and menopausal symptoms. In another study which investigated trait EI, coping and wellbeing in adolescents (Mavroveli, Petrides, Rieffe, & Bakker, 2007), trait EI was associated with use of the 'adaptive' coping styles, 'confrontation,' 'seeking social support' and 'optimistic' coping and less use of the 'maladaptive' styles, 'depressive coping,' 'avoidant coping' and 'palliative coping.' Trait EI was associated with better wellbeing and lower incidence of 'somatic complaints' also in this study. Finally, in another study, EI and emotional regulation were investigated in a student sample (Mikolajczak, Nelis, Hansenne, & Quoidbach, 2008), and coping styles were found to mediate between trait EI and the experience of emotions.

In summary, approach-oriented coping appears to be related to lower levels of distress in infertility whilst avoidance coping appears to be related to higher distress. High self-esteem and optimism have also been found to relate to lower distress in infertility and these are facets of trait emotional intelligence. For these reasons, it seems important and worthwhile to attempt to clarify the relationship between emotional intelligence, coping styles, distress and wellbeing in this clinical population. This knowledge could aid our understanding of distress in this group and potentially add to the range of interventions which may help to reduce this distress.

The aim of the present study will be to investigate the relationship between coping, emotional intelligence and distress in women experiencing infertility. More specifically:

- how does emotional intelligence relate to coping style in infertility?
- how does emotional intelligence relate to distress and wellbeing in infertility?
- does coping style mediate between emotional intelligence and distress/wellbeing in infertility?

The hypotheses are framed in terms of relationships of the other factors with distress; relationships between these factors and wellbeing were anticipated to be in the opposite direction. It is hypothesised that, among women experiencing infertility:

1. There will be a significant positive correlation between emotional intelligence and approach-oriented coping, and a significant negative correlation between emotional intelligence and avoidance coping
2. There will be a significant negative correlation between emotional intelligence and distress

3. There will be a significant negative correlation between approach coping and distress and a significant positive correlation between avoidance coping and distress
4. Coping style will mediate the relationship between emotional intelligence and distress.

Method

Design

This was a cross-sectional, non-experimental study using questionnaires and generating quantitative data. A sample-size calculation was carried out to find the number of participants required to produce sufficient power to detect significant mediation among the variables as described above. Fritz and McKinnon's (2007) calculations, based on Baron and Kenny's (1986) mediation model, were used to guide sample size. A large effect size was anticipated for all correlations (EI-distress, EI-coping, and coping-distress) on the basis of previous research, producing a requirement for a minimum of 36 participants.

Participants

All women attending a sub-fertility clinic between October 2010 and April 2011 were approached in an opportunity sample. Participants who had an interpreter at the clinic with them were not invited to participate, as their level of English comprehension was expected to be insufficient for the purpose of the study.

Measures

Demographic and infertility questionnaire (see Appendix J)

This was constructed for the purpose of the study, to collect demographic information such as age and socio-economic status, as well as infertility-related information. Participants were asked whether they had any biological or other children, whether they had ever been pregnant and whether they had previously had any treatment for infertility. They were also asked whether they believed that their infertility was due to male, female or combined factors. Finally they were asked whether they had ever sought any professional help for psychological difficulties, and if they had, whether this was since or prior to experiencing fertility problems.

Emotional Intelligence (see Appendix O for further information regarding choice of measure for EI)

The Schutte Emotional Intelligence Scale (SEIS, Schutte et al., 1998) (see Appendix L) is a well-validated and widely-used measure of trait emotional intelligence, which was constructed using Salovey and Mayer's (1989) original definition of emotional intelligence. It has 33 items, each scoring 1-5, giving a possible score range of 33-165. Petrides and Furnham (2000) found an internal consistency reliability of .90 for this scale. The test-retest reliability has been found to be .78 (Schutte et al., 1998). There is evidence to support either a one-factor model for this scale (Schutte, Malouff, Simunek, McKenley, & Hollander, 2002) or alternatively a four-factor model (Ciarrochi, Chan, & Bajgar, 2001), where the factors are: 1. perception of emotions, 2. managing emotions in the self; 3. managing emotions in others and 4. utilising emotions.

Coping

The Brief Coping Orientation for Problem Experiences (Brief COPE, Carver, 1997a) (see Appendix K) is a well-validated measure of coping which has been particularly widely used in health-related research. The original COPE had 60 items but the Brief COPE has 28 items, each rated on a Likert scale of 1-4, giving a possible score range of 28 to 112. The internal consistency reliability for the Brief COPE is .72 (Carver, 1997a). The reliabilities of all subscales (each of which have only two items) is above .50 which is regarded as acceptable (Nunnally, 1978). The subscales are: 1. Active Coping 2. Planning 3. Positive Reframing 4. Acceptance 5. Humour 6. Religion 7. Using Emotional Support 8. Using Instrumental Support 9. Self-Distraction 10. Denial 11. Venting 12. Substance Use 13. Behavioural Disengagement 14. Self-Blame.

Distress

The Hospital Anxiety and Depression Scale (HADS, Zigmond & Snaith, 1983) (see Appendix M) is a very widely-used and well-validated measure of distress which is well-accepted by patients and suitable for use with patients who may have physical health problems (Herrmann, 1997). It has two subscales; anxiety and depression, with 7 items each, making a total of 14 items, each scored 0-3 points, giving a possible range of 0-42. According to (Herrmann, 1997), the internal consistency for the anxiety subscale is .80 and for the depression subscale is .81. The subscales can be combined to produce an overall 'distress' score (Zigmond & Snaith, 1983).

Wellbeing

The Psychological General Well-Being Index (PGWBI, Dupuy, 1984) (see Appendix N) is designed to measure intrapersonal emotional states which reflect subjective wellbeing or distress. It has been extensively and internationally used in relation to quality of life assessment in chronic health conditions and the general population. There is substantial evidence for its reliability and validity (Marquis, Chassany, & Abetz, 2004). It has 22 items and takes 10 minutes or less to complete. The items relate to six dimensions: 1. Anxiety 2. Depressed Mood 3. Positive Well-Being 4. Self-Control 5. General Health 6. Vitality and are scored between 0-5 points each, giving a possible range of 0-110. There is a high level of internal consistency and so the subscales are often combined to produce an overall Total Wellbeing Score (Index).

Procedure

Clinic staff approached potential participants to alert them to the study taking place and to ask their permission for the lead researcher to discuss it with them. If permission was granted, the lead researcher gave the patient a brief verbal overview of the study. Following this the patient had the opportunity to ask questions, and was given an information sheet (see Appendix H) with further details.

If the patient agreed to take part, she was asked to sign the consent form (see Appendix I) and was given a participant pack containing all measures. She was invited to fill in the questionnaires there in the clinic or at home (or a combination of the two), whatever would be most convenient. At some point prior to leaving the clinic, she was provided with a freepost envelope for returning the measures by post if she wished to complete the measures at home.

Potential participants were not contacted again by the researcher if they did not return the questionnaires, as in such cases it was assumed that they did not wish to participate.

As participation was anonymous and some questionnaires were returned by post, it was not possible to collect data regarding who did and did not participate.

Statistical analysis

The analyses were undertaken using Statistical Package for Social Sciences (SPSS) for Windows, Version 16.0, (SPSS Inc. 1989-2007). Approach and avoidance coping scores were calculated using the grouping of subscales outlined in Appendix P such that approach coping comprised active coping, use of emotional support, use of instrumental support, positive reframing, planning, acceptance and religion, whilst avoidance comprised self-distraction, denial, substance use, behavioural disengagement, venting, humour and self-blame.

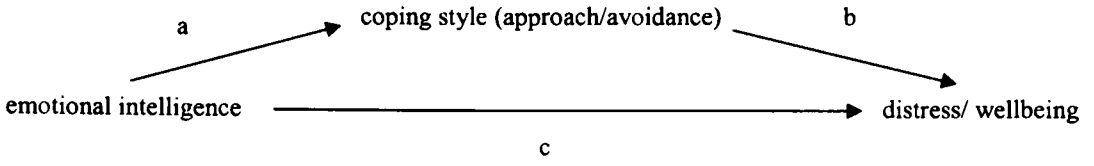
The one-factor model (Schutte et al., 2002) was chosen for the analysis of the EI results from the SEIS, as there was no theoretical reason to support the separate analysis of the different facets of trait EI for the purpose of this study.

Relationships between distress and wellbeing were explored using Pearson correlations. Depending on the strength of the correlation, it was planned to either continue investigating distress and wellbeing separately or to use only the distress scores from this point forward.

Following this, the procedure for testing the mediator model was followed (Baron & Kenny, 1986). Correlations were explored for all the components of the model; EI and approach coping, EI and avoidance coping, approach coping and distress, avoidance coping and distress, and finally EI and distress. To test for mediation (as in Figure 1, below), the strength of the correlations between the components of the indirect path (a and b) was to be compared with the strength of the correlation between the components

of the direct path alone (path c) and when the indirect path is removed from the equation.

Figure 1- The mediator model to be tested in the present study



Perfect mediation would be present if there were a correlation of 1 for the mediation path and a correlation of 0 for the direct path when the mediator variable was entered as a covariate (Baron & Kenny, 1986). Some degree of mediation is said to be present when the following conditions are satisfied. Firstly, there must be significant correlations throughout the indirect path, secondly, there must be a significant correlation in the direct path and finally, the correlation in the direct path reduces significantly and/or becomes non-significant, when the correlation for the indirect path is controlled for (Baron & Kenny, 1986).

Results

Description of sample

Demographics

Participants (N=54) had a mean age of 31.74 ± 3.903 years (range 21-38). Eighty-five percent (n=46) described themselves as white and British. Sixty-eight percent (n=37) of the sample were married, 20.4% (n=11) were cohabiting and 11.1% (n=6) were engaged. Seventy-eight percent (n=42) of the sample were in full-time employment,

11.1% (n=6) were employed part-time and 9.3% (n=5) were unemployed. Highest education levels are given in Table, 1 below; over half of the women were graduates and a large number also had postgraduate qualifications.

Table 1- Highest educational levels of the sample

Highest education level	**% (n)**
postgraduate qualification	38.9 (21)
degree	18.5 (10)
diploma	11.1 (6)
A/AS-Levels or equivalent	16.7 (9)
GCSEs or equivalent	13.0 (7)

Previous treatment for emotional problems

Only 14.8% (n=8) had ever received professional help with any emotional problems, and for all of these, this occurred before the fertility problems started.

Infertility information

Most (94.4%, n=51) participants had been trying to conceive for more than 1.5 years and almost half (48.1%, n=26) had been trying for over 3 years. Only 16.7% (n=9) had ever been pregnant. None of the sample had any adopted children or children from previous relationships (reflecting the acceptance criteria for the clinic.) Some (11.1%, n=6) participants had received treatment for their infertility at some time prior to their participation in the study. Some (40.7%, n=22) participants had already received a diagnosis for their infertility; 29.6% (n=16) in the last 12 months, 5.6% (n=3) 1-5 years ago and 5.6% (n=3) more than five years ago.

Descriptive data for EI, coping, distress and wellbeing scores

The mean total scores on the outcome measures are given on Table 2, below. Approach and avoidance coping were calculated as described in Appendix P. The minimum and maximum possible total scores for each measure are provided below the table for information.

Table 2- Mean total scores, standard deviations, minimum and maximum scores and Cronbach's alpha on all outcome measures

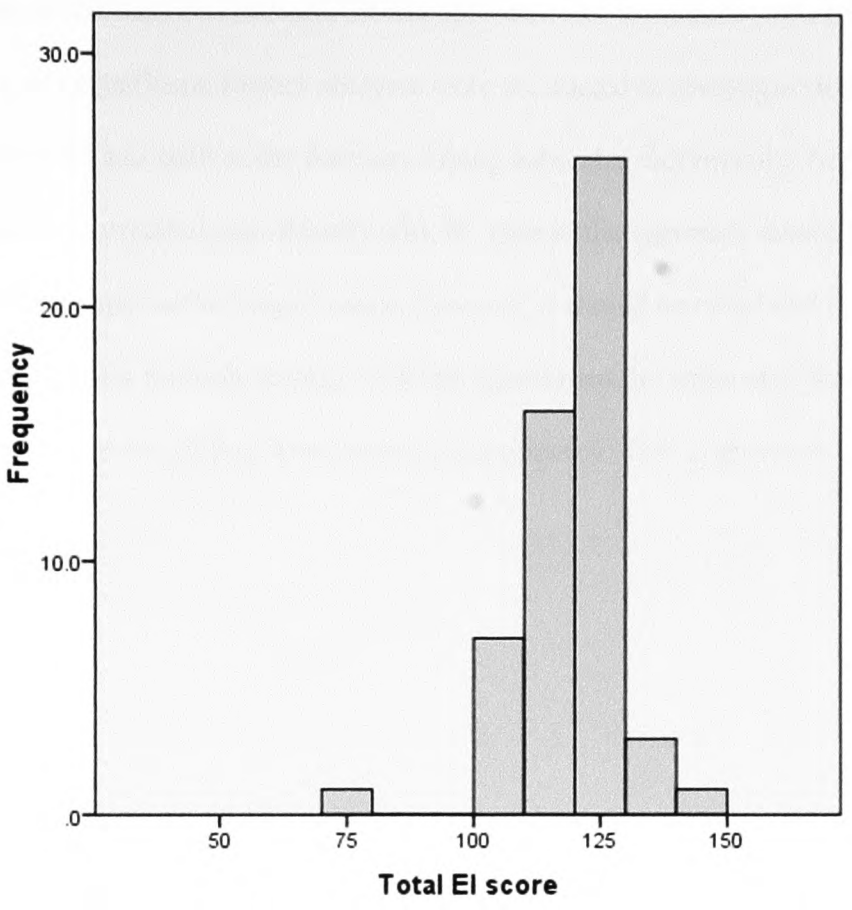
Variable	**Mean (st.dev.)**	**Minimum**	**Maximum**	**Cronbach's alpha**
Emotional Intelligence (SEIS) (*N*=54)	119.07 (10.06)	79	147	.838
Coping (Brief COPE) (*n*=48)	54.96 (8.88)	38	73	.781
approach (*n*=51)	32.41 (6.14)	16	44	.750
avoidance (*n*=48)	22.27 (5.53)	14	34	.764
Distress (HADS) (*n*=53)	11.40 (6.57)	2	30	.897
anxiety (HADS) (*n*=53)	8.09 (4.24)	1	19	.861
depression (HADS) (*n*=53)	3.30 (2.82)	0	11	.798
Wellbeing (PGWBI) (*N*=54)	74.50 (19.81)	10	102	.949

Note. Possible total scores for each measure are as follows: SEIS 33-165; Brief COPE 28-112; Brief COPE (approach) 14-66; Brief COPE (avoidance) 14-66; HADS (distress) 0-42; HADS (depression) 0-21; HADS (anxiety) 0-21, PGWBI 0-110. In all cases, a higher score indicates 'more' of that construct.

There was a fairly strong correlation between the depression and anxiety components of the HADS (n=53, r =.721, p<.001) therefore it was deemed appropriate to use the composite of 'distress' throughout the results (as planned), rather than separating these components.

As shown in Table 2, with the exception of the EI scores, the minimum and maximum scores for the measures in the present sample were close to the minimum and maximum possible scores for those measures. The scores for EI did not vary as widely so as to span the whole possible range, and instead were clustered near the upper end of the scale. Only one individual scored below 100 whereas possible scores range from 33 to 165. This is illustrated in Figure 2, below. For this reason, the median and inter-quartile range may give a better a better indication of the distribution of EI scores than the mean and standard deviation in Table 2, above. The median score for EI was 120.5 and the middle 50% of scores were between 114.8 and 125.0.

Figure 2- Histogram to show distribution of EI scores



Correlation between distress and wellbeing

Pearson's correlations produced a significant negative relationship between distress and wellbeing (n= 53, r =-.810, p<0.01). Since the correlation was strong, the decision was made not to carry out any separate analyses for wellbeing throughout the rest of the results and to use only distress (HADS total) scores from this point forward.

Correlations between EI and coping

In order to test the mediator model, correlations were first calculated for EI with approach and avoidance coping. Correlations were weak and not significant (approach n=51, r =.206, p=.148; avoidance n=48, r =-.041, p=.780) for either of these, therefore the mediator model could not apply to the data from the present study.

Post-hoc analyses: correlations between the original coping subscales and EI

Since the correlations between EI and approach and avoidance coping had not been strong or significant, further analyses were conducted to investigate the relationships between EI and each of the fourteen coping subscales individually. None of the subscales correlated significantly with EI. One of the approach subscales, positive reframing, approached significance, however, it should be noted that this was without adjustment for multiple testing; with this adjustment the value of p would be more conservative and further from reaching significance. This is shown in Table 3, below.

Table 3- Correlations between EI and the coping subscales

Coping composite	**Brief COPE Subscale**	***n***	**r**	**p**
Avoidance	self-distraction	52	.117	.408
	denial	53	-.227	.102
	substance use	51	-.001	.994
	behavioural disengagement	54	-.187	.175
	venting	52	-.119	.401
	self-blame	54	-.025	.859
	humour	52	-.167	.237
Approach	use of instrumental support	52	.175	.216
	use of emotional support	54	.213	.122
	active coping	54	-.080	.565
	planning	54	-.009	.946
	positive reframing	52	.270	.053
	religion	54	.013	.924
	acceptance	54	.034	.807

Correlations between coping styles and distress and between EI and distress

The other correlations relevant to testing the mediator model were, firstly, the relationship between coping and distress (path b of Figure 1), and secondly, between EI and distress (path c of Figure 1). Approach coping did not correlate significantly with distress (n= 50, r=.108, p=.457) whereas there was a significant correlation between avoidance coping and distress (n= 47, r=.613, p<0.01). The correlation between EI and distress was not significant (n= 53, r =-.255, p=.066).

Post-hoc analyses: correlations between the original coping subscales and distress

Further analyses were undertaken to investigate exactly which coping subscales correlated significantly with distress. These are shown in Table 4, below.

Table 4- Correlations between Brief COPE subscales and distress

Coping composite	**Brief COPE Subscale**	***n***	***r***	***p***
Avoidance	self-distraction	51	.430	.002
	denial	52	.395	.004
	substance use	50	.302	.033
	behavioural disengagement	53	.418	.002
	venting	51	.406	.003
	self-blame	53	.565	.000
	humour	51	-.023	.874
Approach	use of instrumental support	51	.060	.677
	use of emotional support	53	.132	.344
	active coping	53	.147	.294
	planning	53	.176	.208
	positive reframing	51	-.052	.715
	religion	53	.063	.653
	acceptance	53	.077	.586

As can be seen in Table 4, the only significant correlations were positive correlations between subscales from the 'avoidance' composite; however, this was without adjusting for multiple comparisons (as mentioned above). No coping styles significantly

correlated with distress in a negative direction, nor were any of the subscales from the approach composite correlated with distress in either direction.

Post-hoc analyses: effects of infertility-related factors on distress

Analyses were carried out to investigate whether duration of infertility and presence or absence of diagnosis had any significant effect on distress, so as to determine whether there would be any utility in repeating the main analyses with these factors controlled for. No significant differences in distress between groups were found (duration of infertility N= 54 (2), p=.281, diagnosis versus no diagnosis, n= 45, p=.188), therefore this line of enquiry was not pursued.

Summary

This study aimed to investigate the relationships between emotional intelligence (EI), coping styles and distress. It was hypothesised that coping style would mediate the relationship between EI and distress. However, the expected relationships between EI and coping (approach and avoidance) and between EI and distress were not present, therefore the mediator model was not applicable to the data. Moreover, on further examination of the correlations between EI and the original coping subscales, there was not a single significant correlation among these, although 'positive reframing' was close to significance (p=.053, Table 3).

Discussion

The lack of significant correlations between EI and the other factors was surprising, given that EI comprises self-esteem and optimism which previous research has suggested are related to adjustment to infertility (Koropatnick et al., 1993; Litt et al., 1992). It was also surprising given that EI is associated with distress in women experiencing the menopause (Bauld & Brown, 2009). Possible reasons for this finding will be discussed below.

The anticipated relationship between coping styles (approach and avoidance) and distress was partially present; avoidance coping was significantly and positively correlated with distress whereas approach coping was not significantly correlated with distress. This was explored further by examining the correlations of the original coping subscales with distress. Several styles had a significant positive correlation; self-distraction, denial, substance use, behavioural disengagement, venting and self-blame. It could be argued that it was unnecessary to include this analysis since there was the expected relationship between avoidance coping and distress. However, it was felt likely to be useful to report the exact subscales which were significantly correlated for the purpose of future investigations of coping styles and distress in this patient population. It was also considered appropriate because studies in this area usually provide this level of detail (Bayley et al., 2009; Hsu & Kuo, 2002).

The significant correlation between avoidance coping and distress is consistent with the findings of previous studies of coping and distress in infertility (Bayley et al., 2009; Hsu & Kuo, 2002; Morrow et al., 1995; Stanton et al., 1992) and therefore suggests that the design of this study was valid. The present study found no significant relationship between approach coping and distress. Previous research on this has produced mixed results and there is less consensus as to which coping styles are associated with lower

distress than as to which are associated with higher distress (Gardner, 2011, unpublished review).

The lack of significant relationship between EI and coping and between EI and distress could be partly due to the small range over which EI scores varied in this study. Although the possible scores on the SEIS range from 33 to 165, the range in this study was 79-147. Moreover, only one participant scored less than 100. This limits the scope for correlation between EI and other factors. It is interesting to consider why the EI scores might have covered such a narrow range.

One possibility is that a bias occurred whereby participants wished to portray themselves positively, therefore rated themselves more highly on EI than reflects their true perceptions of their emotional skills. However, the question remains as to why this would occur with EI to a greater extent than with the other factors. It could be that it was more obvious to participants how to portray themselves positively on the SEIS than on the other scales, and additionally, the word 'intelligence' in the title of the SEIS would have implied that high scores equate to 'good'. There is also the possibility that participants already felt that their emotional abilities may be under question because of their fertility problems and because historically, it was thought that infertility may be caused by psychological factors (Greil, 1997).

Another possible explanation is that only those women who had a positive view of their emotional abilities agreed to take part in the study. Alternatively, of all the women experiencing fertility concerns in the population, perhaps only those who have good emotional abilities choose to seek treatment and therefore it is only they who would be attending the clinic at all. It is not possible, on the basis of existing research, to suggest which of these explanations is most likely to be correct.

Another pertinent matter in relation to the lack of significant correlation between EI and other factors is the fact that in the present study, general distress was the outcome measure whereas in some previous studies, the outcome measure was 'adjustment' to infertility. 'Adjustment' is a term which has been used to refer to various other psychological constructs within infertility research, including depression, anxiety, relationship difficulties, life satisfaction, general health and self-esteem (Ramazanzadeh, Noorbala, Abedinia, & Naghizadeh, 2009). It has also been used to refer specifically to the extent to which individuals are able to maintain a balanced view of their wish for a child and to continue to value other things in life (Glover, Hunter, Richards, Katz, & Abel, 1999). The studies which prompted the generation of the present study were Litt, Tennen, Affleck and Klock (1992) and Koropatnick, Daniluk and Pattinson (1993), which found associations of optimism and self-esteem (which are part of trait EI) with 'adjustment' to infertility respectively. In these studies, 'adjustment' was assessed using various measures, not just of depression and anxiety, and this could help explain the lack of association between EI and distress scores in the present study.

Comparisons of HADS, Brief COPE and SEIS scores with norms and with scores from similar studies

The scores on the outcome measures in the present study were broadly comparable with data from similar studies. For the HADS, the scores for the present study, especially for the depression subscale, did not vary greatly (1-19 for anxiety; 0-11 for depression, each out of 21 points) and only the anxiety mean score was within the clinical range, corresponding to 'mild' anxiety. The small range in the scores limits the scope for correlations with the other factors of interest.

Slade, O'Neill, Simpson and Lashen (2007) assessed distress using the HADS in women attending an infertility clinic for the first time, and reported means of 8.91 (standard deviation 3.93) for anxiety and 3.93 (standard deviation 3.19) for depression. This is very similar to the scores from the present study; means were 8.09 (standard deviation 4.24) for anxiety and 3.30 (standard deviation 2.82) for depression. In a study of the general population using a sample representative of adults in the United Kingdom, Crawford, Henry, Crombie and Taylor (2001) found means of 6.14 (standard deviation 3.76) for anxiety and 3.68 (standard deviation 3.07) for depression, both of which are lower than in the present results.

For the Brief COPE, no scores from previous infertility studies are available as this measure has not been frequently used with this specific population, and descriptive data are not always reported for the individual subscales. However, a recent study was carried out of women with breast cancer undergoing chemotherapy in Malaysia using the English version of the Brief COPE (Yusoff et al., 2010) and this study provides the necessary details for comparison. Table 5, below, gives the means and standard deviations of the Brief COPE subscales for that study and for the present study.

Table 5- Brief COPE subscale mean scores and standard deviations in a recent study (Yusoff et al., 2010) compared with the present study

Brief COPE subscale	(Yusoff et al., 2010)	**present study**
self-distraction	5.41 (1.57)	4.35 (1.83)
denial	5.70 (1.47)	2.58 (1.22)
substance use	2.05 (0.33)	2.37 (0.80)
behavioural disengagement	4.70 (1.13)	2.65 (1.17)
venting	5.49 (1.48)	3.67 (1.49)
self-blame	4.92 (1.01)	3.65 (2.09)
humour	3.40 (2.10)	3.25 (1.60)
using instrumental support	5.84 (1.72)	4.17 (1.60)
using emotional support	5.62 (1.50)	5.02 (1.79)
active coping	5.84 (1.50)	5.54 (1.60)
planning	5.51 (1.87)	5.59 (1.65)
positive reframing	4.96 (1.18)	4.19 (1.25)
religion	6.84 (1.79)	2.63 (1.05)
acceptance	6.60 (1.62)	5.46 (1.71)

Except for religion, denial and behavioural disengagement, all scores were within 2.0 points of each other, (all scores are out of a possible 8.0). These differences may be due to cultural factors such as the prevalence of religion in the population.

In the original scale development of the SEIS (Schutte et al., 1998), the mean score of female participants was 130.94 (standard deviation 15.09). In a recent study of EI in women experiencing the menopause, the mean EI was 130.86 (standard deviation 16.28) (Bauld & Brown, 2009). In another study (Saklofske, Austin, & Minski, 2003), female students had a mean score of 124.25 (standard deviation 13.22). All of these are higher than the scores of the present study (mean 119.07, standard deviation 10.06) and all have greater standard deviations. Thus it seems less likely that there was a positive bias in the present study than it first appeared from viewing the present results alone.

However, the standard deviations are all higher in the previous studies, which supports the assertion that the variation among scores in the present study was relatively low, which in itself suggests that bias may be present.

Other issues

Stage of infertility and how this relates to coping and distress was recently investigated in a review by the author (Gardner, 2011, unpublished). Stage of infertility was not specifically assessed in the present study since there did not appear to be any clear, systematic differences between the associations at different stages of infertility in this review.

The review (Gardner, 2011) also evaluated the extent to which the 'goodness of fit' hypothesis (Terry & Hynes, 1998) fitted the data from studies of coping and distress in women experiencing infertility. This hypothesis states that 'problem -appraisal' and 'emotional approach' coping will be associated with lower distress whereas 'problem-management' and avoidance strategies will be associated with higher distress. The experience of infertility as a whole was assumed to be a 'low-control stressor', which was an extension of Terry and Hynes' (1998) assertion that specifically, a 'failed IVF attempt' is a low-control stressor.

In the reviewed studies, there was more support for the association between avoidance and higher distress than for any of the other associations between coping and distress suggested by the 'goodness of fit' hypothesis. The results of the present study appeared to be in line with these findings. In the present study, although the coping styles investigated did not fit exactly with the styles referred to by Terry and Hynes (1998), the present results did show an association of higher distress scores with greater use of avoidance coping.

Other parts of the 'goodness of fit' hypothesis were not supported here; this might have been predicted from the weaker associations for these in the review. The most similar styles in this study to 'problem-appraisal' and 'emotional approach' coping from the Terry and Hynes (1998) study appear to be 'positive reframing' and 'acceptance.' However, neither these, nor any of the other approach coping styles, were significantly associated with lower distress in the present study. Finally 'problem management' (Terry & Hynes, 1998) is perhaps most similar to the styles of 'active' coping and 'planning' assessed here, but neither of these were associated with higher distress in the present study.

Wellbeing was assessed in the present study but because of the very high (negative) correlation of the wellbeing scores with distress scores (r=.810), it was not thought appropriate to analyse correlations of other factors with distress and wellbeing separately. Wellbeing has not always been assessed in studies of coping and distress in infertility (Gardner, 2011, unpublished review), but was chosen for inclusion in the present study because many studies, in addition to a depression or distress measure, use at least one other measure of psychological health or functioning (Gardner, 2011, unpublished review). Different measures of distress or adjustment to infertility have similarly been found to be highly correlated in other studies (e.g. Litt et al., 1992).

This study had several limitations. A high proportion of participants were white and British, which limits the generalisability of the results. Participants were not given any instructions regarding communication with their partner during the completion of the questionnaires, and those women who filled in the questionnaires at the clinic were generally sitting next to their partners throughout. The possibilities of their partners either contributing their opinions, or, merely by their presence, limiting the extent to which the women felt able to answer questions honestly, cannot be ruled out.

Participants were not asked to state the exact stage which their infertility assessment or treatment had reached. As suggested previously, distress may vary with this and so too may the types of coping which are useful or effective for reducing distress.

The type of EI investigated in this study was trait EI rather than ability EI. This is because there have been more extensive links made in previous research between trait EI and health (Schutte et al., 1998). However, trait EI is measured using self-report, making it susceptible to bias. In addition, it is questionable why it should be the case that trait EI and health are more closely related than ability EI and health. One possibility is that a common method bias is operating whereby stronger correlations exist simply because self-report is the mode of measurement for both health outcomes and trait EI, whereas ability EI is not measured in this way. Some researchers, including those who originally conceptualised EI as an 'ability,' do not consider the 'trait' conceptualisation or its measurement to be appropriate (Mayer, Salovey, & Caruso, 2008). These points suggest that caution is required in the interpretation of results of any study using a measure of EI, particularly trait EI.

Some recent research investigating coping styles in couples experiencing infertility has examined how their styles interact. This appears to be an important consideration as there is some evidence that the styles used most by one member of the couple can impact on the other partner's distress (Peterson et al., 2008). Unfortunately, it was beyond the scope of this study to assess coping in the male partners of participants.

Finally, the fact that this research took place in a purely quantitative modality is a potential limitation in itself, as this method risks losing the essence of the experience of the participants in relation to their infertility.

Further research and clinical implications

The results of the present study did not support the notion that trait EI is associated with either coping styles or distress in women experiencing infertility. This suggests that women's perception of their emotional abilities may not be as relevant to the experience of infertility as to the experience of the menopause (Bauld & Brown, 2009). Perhaps this could be related to the more individual nature of the menopause as a stressor, whereas infertility is more a couple-based stressor. It is easy to imagine, that a higher number of factors might be relevant to distress in infertility because of this difference; for example, interaction of coping styles between partners (as mentioned above). This could reduce the contribution of any personal factors, such as EI, to distress.

It might be argued that the investigation of EI in infertility should be discontinued on the basis of the present study. There were no significant correlations between EI and any of the other factors, yet there were the expected relationships between coping styles and distress, which suggests that the design of the present study was valid. It may be more clinically useful for psychologists to address coping style itself, in helping patients who are experiencing infertility, as there is evidence that this relates to distress (Gardner, 2011, unpublished review) and that inventions can bring about change in patients' coping styles to reduce distress (Austenfeld & Stanton, 2004).

However, the findings of this study appeared to be incongruent with other previous findings (as described above). Also, the correlations of EI with positive reframing (r=.270, p=.053, Table 3) from the approach coping subscales, and of EI with distress (r =-.255, p=.066), were close to reaching significance, which suggests that with a larger sample size, there might have been a significant relationship between these factors. For these reasons, it could alternatively be argued that the investigation of EI in this patient group would be worth pursuing.

If EI should prove, on further investigation, to be associated with coping and distress in infertility, this could be clinically useful. There is research to suggest that EI is amenable to improvement through intervention (Wing, Schutte, & Byrne, 2006), which could be offered to those experiencing high infertility-related distress to reduce this distress.

Summary

This study has been the first to investigate the relationship between trait EI, coping style and distress in women experiencing infertility. The results did not support the existence of a link between trait EI and coping style or between trait EI and distress. However, there was an association between avoidant coping and higher levels of distress, as in previous research.

References

Abbey, A., Halman, L. J., & Andrews, F. M. (1992). Psychosocial, treatment, and demographic-predictors of the stress associated with infertility. *Fertility and Sterility, 57*(1), 122-128.

Austenfeld, J.L., & Stanton, A.L. (2004). Coping through emotional approach: A new look at emotion, coping, and health-related outcomes. *Journal of Personality, 72*(6), 1335-1364.

Baron, R. M., & Kenny, D. A. (1986). The moderator mediator variable distinction in social psychological-research - conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173-1182. doi:10.1037//0022-3514.51.6.1173

Bauld, R., & Brown, R. F. (2009). Stress, psychological distress, psychosocial factors, menopause symptoms and physical health in women. *Maturitas, 62*(2), 160-165. doi:10.1016/j.maturitas.2008.12.004

Bayley, T. M., Slade, P., & Lashen, H. (2009). Relationships between attachment, appraisal, coping and adjustment in men and women experiencing infertility concerns. *Human Reproduction, 24*(11), 2827-2837. doi:10.1093/humrep/dep235

Berghuis, J. P., & Stanton, A. L. (2002). Adjustment to a dyadic stressor: A longitudinal study of coping and depressive symptoms in infertile couples over an insemination attempt. *Journal of Consulting and Clinical Psychology, 70*(2), 433-438. doi:10.1037/0022-006X.70.2.433

Carver, C. (1997). You want to measure coping but your protocol's too long: Consider the brief COPE. *International Journal of Behavioral Medicine, 4*(1), 92-100. doi:10.1207/s15327558ijbm0401_6

Ciarrochi, J., Chan, A. Y. C., & Bajgar, J. (2001). Measuring emotional intelligence in adolescents. *Personality and Individual Differences, 31*(7), 1105-1119. doi:10.1016/S0191-8869(00)00207-5

Crawford, J. R., Henry, J. D., Crombie, C., & Taylor, E. P. (2001). Normative data for the HADS from a large non-clinical sample. *British Journal of Clinical Psychology, 40*, 429-434. doi:10.1348/014466501163904

Dupuy, H. (1984). The psychological general wellbeing index. In N. K. Wenger, M. E. Mattson, C. D. Furberg & J. Elinson (Eds.), *Assessment of quality of life in clinical trials of cardiovascular therapies* (pp. 170-183). Hoboken, New Jersey: Le Jacq Publishing.

Ensel, W. M., & Lin, N. (1991). The life stress paradigm and psychological distress. *Journal of Health and Social Behavior, 32*(4), 321-341. doi:10.2307/2137101

Gardner, A. L. (2011). *How do coping styles relate to distress among women experiencing infertility? A systematic review* Unpublished manuscript.

Glover, L., Hunter, M., Richards, J., Katz, M., & Abel, P. D. (1999). Development of the fertility adjustment scale. *Fertility and Sterility, 72*(4), 623-628. doi:DOI: 10.1016/S0015-0282(99)00304-0

Greenfeld, D. A., Diamond, M. P., & Decherney, A. H. (1988). Grief reactions following invitro fertilization treatment. *Journal of Psychosomatic Obstetrics and Gynecology, 8*(3), 169-174. doi:10.3109/01674828809016784

Greil, A. (1997). Infertility and psychological distress: A critical review of the literature. *Social Science & Medicine, 45*(11), 1679-1704. doi:10.1016/S0277-9536(97)00102-0

Haemmerli, K., Znoj, H., & Barth, J. (2009). The efficacy of psychological interventions for infertile patients: A meta-analysis examining mental health and pregnancy rate. *Human Reproduction Update, 15*(3), 279-295. doi:10.1093/humupd/dmp002

Herrmann, C. (1997). International experiences with the hospital anxiety and depression scale: A review of validation data and clinical results. *Journal of Psychosomatic Research, 42*(1), 17-41. doi:10.1016/S0022-3999(96)00216-4

Hsu, Y., & Kuo, B. (2002). Evaluations of emotional reactions and coping behaviors as well as correlated factors for infertile couples receiving assisted reproductive technologies. *The Journal of Nursing Research: JNR, 10*(4), 291-302.

Koropatnick, S., Daniluk, J., & Pattinson, H. A. (1993). Infertility - a nonevent transition. *Fertility and Sterility, 59*(1), 163-171.

Lancastle, D., & Boivin, J. (2005). Dispositional optimism, trait anxiety, and coping: Unique or shared effects on biological response to fertility treatment? *Health Psychology, 24*(2), 171-178. doi:10.1037/0278-6133.24.2.171

Litt, M. D., Tennen, H., Affleck, G., & Klock, S. (1992). Coping and cognitive factors in adaptation to in vitro fertilization failure. *Journal of Behavioral Medicine, 15*(2), 171-187. doi:10.1007/BF00848324

Mahajan, N. N., Turnbull, D. A., Davies, M. J., Jindal, U. N., Briggs, N. E., & Taplin, J. E. (2009). Adjustment to infertility: The role of intrapersonal and interpersonal resources/vulnerabilities. *Human Reproduction, 24*(4), 906-912. doi:10.1093/humrep/den462

Marquis, P., Chassany, O., & Abetz, L. (2004). A comprehensive strategy for the interpretation of quality-of-life data based on existing methods. *Value in Health, 7*(1), 93-104. doi:10.1111/j.1524-4733.2004.71217.x

Mavroveli, S., Petrides, K. V., Rieffe, C., & Bakker, F. (2007). Trait emotional intelligence, psychological well-being and peer-rated social competence in adolescence. *British Journal of Developmental Psychology, 25*, 263-275. doi:10.1348/026151006X118577

Mayer, J. D., & Salovey, P. (1993). The intelligence of emotional intelligence. *Intelligence, 17*(4), 433-442. doi:10.1016/0160-2896(93)90010-3

Mikolajczak, M., Nelis, D., Hansenne, M., & Quoidbach, J. (2008). If you can regulate sadness, you can probably regulate shame: Associations between trait emotional intelligence, emotion regulation and coping efficiency across discrete emotions. *Personality and Individual Differences, 44*(6), 1356-1368. doi:10.1016/j.paid.2007.12.004

Mikolajczak, M., Petrides, K. V., & Hurry, J. (2009). Adolescents choosing self-harm as an emotion regulation strategy: The protective role of trait emotional

intelligence. *British Journal of Clinical Psychology, 48*, 181-193. doi:10.1348/014466508X386027

Morrow, K. A., Thoreson, R. W., & Penney, L. L. (1995). Predictors of psychological distress among infertility clinic patients. *Journal of Consulting and Clinical Psychology, 63*(1), 163-167. doi:10.1037/0022-006X.63.1.163

Newton, C., Sherrard, W., & Glavac, I. (1999). The fertility problem inventory: Measuring perceived infertility-related stress. *Fertility and Sterility, 72*(1), 54-62. doi:10.1016/S0015-0282(99)00164-8

Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.

Peterson, B. D., Pirritano, M., Christensen, U., & Schmidt, L. (2008). The impact of partner coping in couples experiencing infertility. *Human Reproduction, 23*(5), 1128-1137. doi:10.1093/humrep/den067

Petrides, K. V., & Furnham, A. (2000). On the dimensional structure of emotional intelligence. *Personality and Individual Differences, 29*(2), 313-320. doi:10.1016/S0191-8869(99)00195-6

Petrides, K., & Furnham, A. (2001). Trait emotional intelligence: Psychometric investigation with reference to established trait taxonomies. *European Journal of Personality, 15*(6), 425-448. doi:10.1002/per.416

Ramazanzadeh, F., Noorbala, A. A., Abedinia, N., & Naghizadeh, M. M. (2009). Emotional adjustment in infertile couples. *Iranian Journal of Reproductive Medicine, 7*(3), 97-103.

Saklofske, D. H., Austin, E. J., & Minski, P. S. (2003). Factor structure and validity of a trait emotional intelligence measure. *Personality and Individual Differences, 34*(4), 707-721. doi:DOI: 10.1016/S0191-8869(02)00056-9

Salovey, P., & Mayer, J. D. (1989). Emotional intelligence. *Imagination, Cognition and Personality, 9*(3), 185-211.

Schutte, N. S., Malouff, J. M., Hall, L. E., Haggerty, D. J., Cooper, J. T., Golden, C. J., & Dornheim, L. (1998). Development and validation of a measure of emotional intelligence. *Personality and Individual Differences, 25*(2), 167-177. doi:10.1016/S0191-8869(98)00001-4

Schutte, N. S., Malouff, J. M., Simunek, M., McKenley, J., & Hollander, S. (2002). Characteristic emotional intelligence and emotional well-being. *Cognition and Emotion, 16*(6), 769-785. doi:10.1080/02699930143000482

Skinner, E. A., Edge, K., Altman, J., & Sherwood, H. (2003). Searching for the structure of coping: A review and critique of category systems for classifying ways of coping. *Psychological Bulletin, 129*(2), 216-269. doi:10.1037/0033-2909.129.2.216

Slade, P., O'Neill, C., Simpson, A. J., & Lashen, H. (2007). The relationship between perceived stigma, disclosure patterns support and distress in new attendees at an infertility clinic RID A-6936-2008. *Human Reproduction, 22*(8), 2309-2317. doi:10.1093/humrep/dem115

Stanton, A. L., & Danoff-Burg, S. (1995). Selected issues in women's reproductive health: Psychological perspectives. In S. J. Gallant (Ed.), *The psychology of women's health: Progress and challenges in research and application.* (pp. 261-

305). Washington, DC US: American Psychological Association. doi:10.1037/10178-007

Stanton, A. L., Lobel, M., Sears, S., & DeLuca, R. S. (2002). Psychosocial aspects of selected issues in women's reproductive health: Current status and future directions. *Journal of Consulting and Clinical Psychology, 70*(3), 751-770. doi:10.1037/0022-006X.70.3.751

Stanton, A. L., Tennen, H., Affleck, G., & Mendola, R. (1992). Coping and adjustment to infertility. *Journal of Social and Clinical Psychology, 11*(1), 1-13.

Stephen, E., & Chandra, A. (2000). Use of infertility services in the united states: 1995. *Family Planning Perspectives, 32*(3), 132-137. doi:10.2307/2648162

Terry, D. J., & Hynes, G. J. (1998). Adjustment to a low-control situation: Reexamining the role of coping responses. *Journal of Personality and Social Psychology, 74*(4), 1078-1092. doi:10.1037/0022-3514.74.4.1078

Vernon, P. A., Petrides, K. V., Bratko, D., & Schermer, J. A. (2008). A behavioral genetic study of trait emotional intelligence. *Emotion, 8*(5), 635-642. doi:10.1037/a0013439

Wing, J. F., Schutte, N. S., & Byrne, B. (2006). The effect of positive writing on emotional intelligence and life satisfaction. *Journal of Clinical Psychology, 62*(10), 1291-1302. doi:10.1002/jclp.20292

Wright, J., Bissonnette, F., Duchesne, C., Benoit, J., Sabourin, S., & Girard, Y. (1991). Psychosocial distress and infertility - men and women respond differently. *Fertility and Sterility, 55*(1), 100-108.

Yusoff, N., Low, W. Y., & Yip, C. H. (2010). Reliability and validity of the brief COPE scale (english version) among women with breast cancer undergoing treatment of adjuvant chemotherapy: A malaysian study. *The Medical Journal of Malaysia, 65*(1), 41-44.

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

PART THREE: APPENDICES

Appendix A- Reflective Statement

Introduction

When I embarked in this research, I had in mind some quotations presented by the Research Tutor in our Department;

- Getting started will take at least as long as the data collection
- The number of available subjects will be one-tenth of your first estimate
- Completion of the project will take twice as long as your last estimate and three times as long as your first estimate
- A research project will change title in the middle
- The help provided by other people has a half-life of two weeks
- The tedium of research is directly proportional to its objectivity
- The effort of writing up is an exponential function of the time since the data were collected.

I had found these quotations highly amusing, I think because they seemed to me to be so apt, fitting with my previous experience of research. Whilst in retrospect, I would not say that all or even most of these statements were true of my experience of this project, I found their message to be tremendously useful: 'do not underestimate the time, effort and dedication required to complete a large-scale research project, and always be prepared for things to go less-than-exactly as planned!'

I am certain that keeping this in mind is what enabled me to complete the project within the timeframe available whilst feeling proud of how this was achieved.

Research focus and study design

I had always had an interest in emotional intelligence (EI) and how it relates to distress, and was happy to discover that this issue had recently been investigated more and more in relation to various medical and psychological difficulties. EI seemed likely to be a useful concept to apply to understanding distress in infertility and I was surprised to find that this had not yet been done. In looking at how EI had been investigated in other health contexts, it soon emerged that coping style was often assessed alongside EI. Also, coping had already been assessed in relation to infertility and distress in several other studies. This appeared to make it an ideal candidate for inclusion in the study to bridge the gap between EI and existing infertility research.

Even having born in mind the research quotations above, I was surprised by how long it took to define the rationale and design for the present study. The background to EI and the links between EI and other psychological constructs were complex and warranted an entire investigation in themselves (see Appendix O). This was the point in the project at which progress seemed slowest; however, this work laid crucial foundations for my understanding of the theoretical and practical issues relevant to my research.

Data collection

In planning the procedure, it was necessary to visit the clinic and liaise with the clinical and administrative staff. Three individuals facilitated this process; my research supervisor, who had previously supervised a trainee carrying out research at the same clinic, this trainee herself, and one of the consultants who led the clinic.

I originally planned to be based in the nurses' station at the clinic and to approach potential participants via introduction by the nurses, as it was a Research Ethics requirement for a member of clinic staff to request patients' permission for me to speak to them about the study. However, on the first attempt with this procedure, it proved unsatisfactory as I could not easily tell when potential participants had arrived at the clinic and the nurses were often 'in and out' of the station, managing several clinics simultaneously. I was able to change plans relatively quickly with various staff members' help, and from then on based myself in the reception area.

From the reception area, I could more easily see who needed to be approached about the study. In addition, there were more staff members available there to request patients' permission for me to speak to them. Participants were usually asked this when they first presented at the clinic reception. However, there were times when staff were too busy or distracted to make this request, and participants were missed. In these situations, the ethics requirement could have felt like an obstruction to being able to recruit. However, staff were exceedingly helpful and willing to go out of their way to request permission for me at another time before patients left the clinic. This was the case even when the

omission occurred because I arrived late at the clinic (having been detained by clinical placement activities); for this, I was extremely grateful.

I found that I felt apprehensive prior to the first few visits to the clinic, perhaps because I had been unsure how welcome I would be, and whether staff would value research. I was also unsure how well patients would react to my inviting their participation.

I was conscious that the majority of my time at the clinic was spent sitting waiting for potential participants to arrive, and whilst I did not want to appear aloof by, for example, reading a book throughout this time, I also did not want to appear to be doing nothing! I felt that there was a delicate balance in, firstly, appearing comfortable at the clinic and conveying my sense of legitimacy in being there, but at the same time not taking staff members' help for granted or impinging too much on their space or time.

I enjoyed discussing my research, training and profession with the staff. This was particularly the case with the aforementioned consultant, who confessed to having a great interest in, but little understanding of, psychology and psychological concepts. After a few visits, my time at the clinic felt like a welcome break from the demands of placement and academic work, and even provided space for me to reflect, not only on the research process but on my journey through the training course and development as a Clinical Psychologist.

Writing up

Preparing to write up my research, I felt overwhelmed by the enormity of the task. In collecting data I had felt humbled by the willingness of patients and staff to sacrifice their time and effort. My awareness of their extensive contributions made me eager to communicate my study well and to ensure that it would, itself, make a contribution to the literature. I was also conscious of this being the most important and significant piece of work of mine so far and so I felt anxious to meet my own and others' expectations.

I achieved a sense of manageability of the writing-up task through focussing on single sections at a time. I also found it useful to remember that initial drafts could always be revised, several times if necessary. This prevented me from falling into the trap of thinking that every word or paragraph needed to be 'right' straight away. My supervisor was helpful in that she encouraged me to put my ideas to paper freely, without worrying initially how well they were expressed or how they flowed together. She also helped by offering to look at drafts no matter how 'rough.'

In the event, many sections of both the empirical and review papers were not difficult to write, initially, and did not need a great deal of revision. However, some sections were difficult to write or required extensive reworking. The SLR, in particular, was very time-consuming to complete. I was surprised at just how many issues were relevant to the discussion, and almost none of the first draft of this section remained in the final version. The process of revising this required a great deal of persistence, but I found it to be hugely satisfying when a greater sense of coherence was achieved and the finished product was within reach.

Personal development

Many aspects of the research process were challenging and difficult. I felt the greatest sense of achievement when I successfully handled my Research Ethics Committee meeting; being questioned by a room-full of people was a situation that I had never previously encountered. I also felt a sense of accomplishment when I realised I had come to feel comfortable, both attending the clinic and approaching potential participants. Finally, the process of writing up my research has felt like a major achievement in itself and I have felt increasingly exhilarated by the prospect of completing the project.

At the stage of data analysis, I was disappointed to find that the results of my empirical project were not as I had predicted, and I began to question the utility of the project and whether it had been worthwhile. It seemed that any research must necessarily involve a great deal of effort for relatively little gain. This prompted me to have an extended discussion with a colleague as to the place and value of research in Clinical Psychology, and how even negative findings can be useful and can contribute to our understanding. This enabled me to see that perhaps even if little could be concluded on the basis of my project alone, the work might, in time, prompt important advancements in infertility or EI research in the future.

Concluding remarks

Although the research process has been highly challenging at times and has required me to call on a variety of personal resources in ways which I did not always expect, I feel that the process has been useful and has played a crucial part in my training. I have also

gained an improved understanding of the potential barriers faced by Clinical Psychologists in conducting research alongside clinical commitments, which will help me to plan my own involvement in research in the future.

Appendix B- Rationale for journal choice

I decided to prepare both papers for submission to the British Journal of Health Psychology. There were several reasons for this choice. Firstly this journal is internationally accessible. Many of the studies included in the systematic literature review were carried out in other countries, evidence that infertility-related issues are considered to be important worldwide. I wanted to contribute to knowledge developing globally, rather than just locally.

Secondly, along with being mindful of the international community, I felt that it might be important to highlight the location in which the empirical study was conducted by publishing it in a 'British' journal. This is because it seems likely that there would be important differences in the context of this study compared to any carried out outside of the National Health Service and in cultures with different values and characteristics.

I chose a generic Health Psychology journal rather than an infertility-specific one because, in the case of the empirical paper, the literature from which the study was generated had a focus in areas of Health Psychology research other than just fertility or reproductive health. The experience of infertility was just one of many health contexts in which it could reasonably have been expected, on the basis of previous research, that there might be important associations of trait EI with coping and distress.

In the case of the systematic literature review, I thought that a generic Health Psychology journal would be appropriate because part of the focus of the review is a consideration of infertility as a stressor over which individuals have little control. This lack of controllability is common to many health problems, and therefore I thought that it might be useful to publish it in a journal which does not only focus on reproductive health issues.

I did consider whether a more multidisciplinary journal might be a better forum for presenting this work. However, with careful reflection on the content of the papers, I have concluded that the findings make a stronger contribution to our theoretical understanding of psychological concepts and how these can be applied by Psychologists themselves, rather than being directly applicable to the roles of doctors, nurses or other medical staff at this stage.

Appendix C- Guideline for authors for The British Journal of Health Psychology (for both papers)

The aim of the British Journal of Health Psychology is to provide a forum for high quality research relating to health and illness. The scope of the journal includes all areas of health psychology across the life span, ranging from experimental and clinical research on aetiology and the management of acute and chronic illness, responses to ill-health, screening and medical procedures, to research on health behaviour and psychological aspects of prevention. Research carried out at the individual, group and community levels is welcome, and submissions concerning clinical applications and interventions are particularly encouraged.

The types of paper invited are:

- papers reporting original empirical investigations;
- theoretical papers which may be analyses or commentaries on established theories in health psychology, or presentations of theoretical innovations;
- review papers, which should aim to provide systematic overviews, evaluations and interpretations of research in a given field of health psychology; and
- methodological papers dealing with methodological issues of particular relevance to health psychology.

1. Circulation

The circulation of the Journal is worldwide. Papers are invited and encouraged from authors throughout the world.

2. Length

Papers should normally be no more than 5000 words (excluding the abstract, reference list, tables and figures), although the Editor retains discretion to publish papers beyond this length in cases where the clear and concise expression of the scientific content requires greater length.

3. Editorial policy

The Journal receives a large volume of papers to review each year, and in order to make the process as efficient as possible for authors and editors alike, all papers are initially examined by the Editors to ascertain whether the article is suitable for full peer review. In order to qualify for full review, papers must meet the following criteria:

- the content of the paper falls within the scope of the Journal
- the methods and/or sample size are appropriate for the questions being addressed
- research with student populations is appropriately justified
- the word count is within the stated limit for the Journal (i.e. 5000 words)

4. Submission and reviewing

All manuscripts must be submitted via http://www.editorialmanager.com/bjhp/. The Journal operates a policy of anonymous peer review. Authors must suggest three reviewers when submitting their manuscript, who may or may not be approached by the Associate Editor dealing with the paper.

5. Manuscript requirement

• Contributions must be typed in double spacing with wide margins. All sheets must be numbered.

• Manuscripts should be preceded by a title page which includes a full list of authors and their affiliations, as well as the corresponding author's contact details. A template can be downloaded from here.

• Tables should be typed in double spacing, each on a separate page with a self-explanatory title. Tables should be comprehensible without reference to the text. They should be placed at the end of the manuscript with their approximate locations indicated in the text.

• Figures can be included at the end of the document or attached as separate files, carefully labelled in initial capital/lower case lettering with symbols in a form consistent with text use. Unnecessary background patterns, lines and shading should be avoided. Captions should be listed on a separate sheet. The resolution of digital images must be at least 300 dpi.

• For articles containing original scientific research, a structured abstract of up to 250 words should be included with the headings: Objectives, Design, Methods, Results, Conclusions. Review articles should use these headings: Purpose, Methods, Results, Conclusions.

• For reference citations, please use APA style. Particular care should be taken to ensure that references are accurate and complete. Give all journal titles in full.

• SI units must be used for all measurements, rounded off to practical values if appropriate, with the imperial equivalent in parentheses.

• In normal circumstances, effect size should be incorporated.

• Authors are requested to avoid the use of sexist language.

• Authors are responsible for acquiring written permission to publish lengthy quotations, illustrations, etc. for which they do not own copyright. For guidelines on editorial style, please consult the APA Publication Manual published by the American Psychological Association.

6. Supporting Information

BJHP is happy to accept articles with supporting information supplied for online only publication. This may include appendices, supplementary figures, sound files, videoclips etc. These will be posted on Wiley Online Library with the article. The print version will have a note indicating that extra material is available online. Please indicate clearly on submission which material is for online only publication. Please note that extra online only material is published as supplied by the author in the same file format and is not copyedited or typeset. Further information about this service can be found at
http://authorservices.wiley.com/bauthor/suppmat.asp

7. Copyright

Authors will be required to assign copyright to The British Psychological Society. Copyright assignment is a condition of publication and papers will not be passed to the publisher for production unless copyright has been assigned. To assist authors an appropriate copyright assignment form will be supplied by the editorial office and is also available on the journal's website at http://www.blackwellpublishing.com/pdf/CTA_BPS.pdf. Government employees in both the US and the UK need to complete the Author Warranty sections, although copyright in such cases does not need to be assigned.

Appendix D- Table of excluded studies from systematic literature review

Study authors (year)	Title	Reason for exclusion
(Kraaij, Garnefski, & Vlietstra, 2008)	Cognitive coping and depressive symptoms in definitive infertility: A prospective study	no separate analysis of males and females
Akker (2005)	Coping, quality of life and psychological symptoms in three groups of sub-fertile women	looks at QoL and does not relate coping to distress
Peterson, Pirritano, Christensen, Boivin, Block & Schmidt (2009)	The longitudinal impact of partner coping in couples following 5 years of unsuccessful fertility treatments	longitudinal and interactional effects; distress not examined as an outcome of individual coping style
Pottinger, McKenzie, Fredericks, DaCosta, Wynter, Everett & Walters (2006)	Gender differences in coping with infertility among couples undergoing counselling for in-vitro fertilization treatment	correlation figures not reported and 'strategies' rather than 'styles' evaluated
McQueeney, Stanton & Sigmon (1997)	Efficacy of emotion-focused and problem-focused group therapies for women with fertility problems	no correlation of measured coping styles with distress, only intervention group with distress
Levin, Sher & Theodos (1997)	The effect of intracouple coping concordance on psychological and marital distress in infertility patients	only concordance examined, not individual style effects
Boivin & Lancastle (2010)	Medical waiting periods: imminence, emotions and coping	distress and coping examined across time but no correlation analysis
Daniluk & Tench (2007)	Long-term adjustment of the infertile couples following unsuccessful medical intervention	couple taken as unit of analysis
Hirsch & Hirsch (1995)	The long-term psychosocial	no measure of coping

	effects of infertility	
Verhaak, Smeenk, Evers, Minnen, Kremer & Kraaimaat (2005)	A longitudinal, prospective study on emotional adjustment before, during and after consecutive fertility cycles	no detail of coping effect
Lord & Robertson (2005)	The role of patient appraisal and coping in predicting distress in IVF	no separation of male and female results
Verhaak, Litsen, Evers & Braat (2010)	Who is at risk of emotional problems and how do you know? Screening of women going for IVF treatment	scale development- no specific measure of coping
Hjelmstedt, Andersson, Skoog-Svanberg, Bergh, Boivin & Collins (1999)	Gender differences in psychological reactions to infertility among couples seeking IVF- and ICSI-treatment	no specific measure of distress- Infertility Reactions Scale used instead
Reading, Chang & Kerin (1989)	Psychological state and coping styles across an IVF treatment cycle	Does not look at coping styles according to modern definition; no specific measure of coping styles
Prattke & Gass-Sternas (1992)	Appraisal, coping and emotional health of infertile couples undergoing artificial donor insemination	no separate analysis of male & female correlations of coping style & distress
Woollett (1985)	Childlessness: strategies for coping with infertility	qualitative study
Kraaij et al. (2010)	Cognitive coping, goal adjustment and depressive and anxiety symptoms in people undergoing infertility treatment	no separate analysis of male & female correlations of coping style & distress
Kraaij et al. (2009)	Coping, goal adjustment and positive and negative affect in definitive infertility	no separate analysis of male & female correlations of coping style & distress

(Van den Broeck, D'Hooghe, Enzlin, & Demyttenaere, 2010)	Predictors of psychological distress in patients starting IVF treatment: infertility-specific versus general psychological characteristics	no separate analysis of male & female correlations of coping style & distress
(Lechner, Bolman, & van Dalen, 2006))	Definite involuntary childlessness: associations between coping, social support and psychological distress	no separate analysis of male & female correlations of coping style & distress
(Lukse & Vacc, 1999)	Grief, depression and coping in women undergoing infertility treatment	no correlation between coping style and distress
Edelmann & Connolly (1986)	Psychological aspects of infertility	review article
Callan & Hennessey (1989)	Strategies for coping with infertility	review article
Stanton, Lobel, Sears & DeLuca (2002)	Psychosocial aspects of selected issues in women's reproductive health: Current status and future directions	review article
Deltsidou & Lykeridou (2007)	Emotional distress and infertility: A review of coping strategies	review article
Schmidt (2009)	Social and psychological consequences of infertility and assisted reproduction- what are the research priorities?	review/state of the literature article

Appendix E- Quality Checklist for the systematic literature review

Title_____

	Question	Yes (1)	No (0)	N/A
1.	Is the aim/hypothesis/objective of the study clearly described?			
2.	Are the main outcomes to be measured clearly described in the Introduction or Method section?			
3.	Are the characteristics of the patients included in the study clearly described?			
4.	Are the main findings of the study clearly described?			
5.	Were the participants who were asked to participate representative of the entire population from which they were recruited?			
6.	Were the participants who were prepared to take part in the study representative of the entire population from which they were recruited?			
7.	Were the statistical tests used to assess the main outcomes appropriate?			
8.	Were the main outcome measures used accurate?			

The checklist items were taken from Downs and Black's (1998) paper (items 1, 2, 3, 6, 7, 10, 11, 12 and 20), as these were the only questions which appeared relevant to the included articles in this review. This is because this review is concerned only with correlation studies whereas many of the available quality checklists (including Downs and Black's) for systematic reviews are for randomised controlled trials, case-control studies, qualitative studies or multiple types of study. Some systematic reviews of observational studies refer to the STROBE (2007) checklist (Strengthening the Reporting of OBservational Epidemiological studies) (Vandenbroucke et al., 2007), however, it has been pointed out that this is meant as a guideline for the reporting of studies rather than a tool for assessing methodological quality in systematic reviews (da Costa, Cevallos, Altman et al., 2011).

The raw scores for the included studies are given below. For the star ratings, a study which scored 7 or 8 was awarded three stars; a score of 5 or 6 was awarded two stars and a score of 3 or 4 was awarded one star.

Study	Quality rating
(Bayley et al., 2009)	6
(Peterson et al., 2008)	7

(Benyamini et al., 2008)	8
(Peterson et al., 2006)	7
(Verhaak et al., 2005)	7
(Schmidt et al., 2005)	7
(Hsu & Kuo, 2002)	8
(Berghuis & Stanton, 2002)	6
(Terry & Hynes, 1998)	8
(Morrow et al., 1995)	6
(Hynes et al., 1992)	6
(Stanton et al., 1992)	7
(Litt et al., 1992)	7

References

da Costa B.R., Cevallos M., Altman D.G., et al. BMJ Open (2011). doi:10.1136/bmjopen-2010-000048

Downs, S., & Black, N. (1998). The feasibility of creating a checklist for the assessment of the methodological quality both of randomised and non-randomised studies of health care interventions. *Journal of Epidemiology and Community Health, 52*(6), 377-384.

Vandenbroucke, J. P., von Elm, E., Altman, D. G., Gotzsche, P. C., Mulrow, C. D., Pocock, S. J., . . . STROBE Initiative. (2007). Strengthening the reporting of observational studies in epidemiology (STROBE) explanation and elaboration. *Epidemiology, 18*(6), 805-835. doi:10.1097/EDE.0b013e3181577511

Appendix F- Research Ethics Committee approval for the empirical study (removed for hard binding)

Appendix G- Research and Development Approvals for empirical study (removed for hard binding)

Appendix H- Patient information sheet

We would like to invite you to take part in our research study. Before you decide we would like you to understand why the research is being done and what it would involve for you. ***One of our team will go through the information sheet with you and answer any questions you have.*** *We'd suggest this should take about 5 minutes. Please ask if anything is not clear.*

Emotional intelligence, coping and wellbeing in women attending a fertility clinic

Subfertility can be a difficult and stressful experience. There is evidence to suggest that among subfertile couples, levels of distress are higher amongst women than men.

People cope with difficult experiences in different ways. Sometimes people try to solve problems directly; sometimes they try to find ways of feeling better. People may use different approaches for different problems.

Trait emotional intelligence is the extent to which people think they are good at working with their own and other people's emotions. There is some evidence linking this with how people cope with their problems, and how they feel as a result.

Previous research has looked at how trait emotional intelligence relates to health, including reproductive health (e.g. in women going through menopause). This research is to look at these issues in women undergoing fertility treatment.

What is the purpose of the study?

There is evidence that trait emotional intelligence can be improved. If this study supports the existence of a link between trait emotional intelligence and distress in subfertility, this could help us in future to identify and work with women at risk of high levels of distress.

Why have I been invited?

You have been invited to take part because you are a woman aged 18-50 attending the gynaecology or subfertility clinic. We are hoping to recruit around 100 women in total.

Do I have to take part?

No, it is up to you to decide to take part. We will describe the study and go through this information sheet. If you agree to take part, we will then ask you to sign a consent form. You are free to withdraw at any time, without giving a reason. Whether or not you take part would not affect the standard of care you receive.

What will happen if I decide to take part?

After you sign the consent form, you will be given a pack of questionnaires to fill in. You could do this in the clinic (we would try to make sure there was a quiet room where you could do this) or you could take them home. If you take them home, the researcher will give you a stamped addressed envelope for posting them back to us.

There are five questionnaires. The first will ask some general questions about you and some information about your subfertility. The other questionnaires ask about how you deal with emotions, coping styles, your wellbeing and any distress you are experiencing. The questionnaires should take about 25 minutes to complete.

What are the possible disadvantages and risks of taking part?

Taking part in this study requires some of your time, which may be inconvenient for you. You have the option of filling in the questionnaires here in the clinic or taking them home. If you take them home you will need to remember to fill them in and to post them back to us.

It is possible that you may find some of the questions upsetting. This is because you will be asked to think about your experience of subfertility and how you have been dealing with it. If you become upset during of after answering any of the questions, we encourage you to contact the researcher who can discuss options for further help if you would like.

What are the possible benefits of taking part?

We cannot promise the study will help you but we hope that the information we gain from this study will help improve the treatment of people with subfertility.

Taking part will give you an opportunity to think about how you are coping with what you are going through, and some people find that helpful.

What will happen if I decide I no longer wish to take part?

After signing the consent form, you can still change your mind about taking part in the study. Even if you have already given us your completed questionnaires, you can contact us at any time and we will remove and destroy any information you have provided to us.

If you take your questionnaires home to complete, but decide not to do so, you do not need to do anything and we will assume you no longer wish to take part.

What if there is a problem?

If you have a concern about any aspect of this study, you should ask to speak to the researchers who will do their best to answer your questions [01482 464117]. If you remain unhappy and wish to complain formally, you can do this through the NHS Complaints Procedure. Details can be obtained from the Patient Advice and Liaison Service (PALS) at the main reception desk of Hull Royal Infirmary.

Will my taking part in this study be kept confidential?

All data will be handled according to ethical and legal practice. All information which is collected about you during the course of the research will be anonymous. Your completed questionnaires will be given a code number which will be used throughout the analysis of the results. The coded data will be stored securely on University Departmental premises for five years after completion of the study.

What will happen to the results of the study?

The results will be written up as part of a doctoral qualification and are intended to be published in a scientific journal. You will not be personally identified in any of the results. Information about the results will be available from this clinic upon completion of the study in Summer 2011.

Who is organising and funding the research?

This research is being undertaken as part of a doctoral research project in Clinical Psychology. The research is funded through the University of Hull.

Who has reviewed the study?

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

Further information and contact details

If you have any further questions or queries, please contact Alice Gardner either in person in the clinic or on 01482 464117 between the hours of 9:30am and 4:30pm.

Appendix I- Consent form

Title of Project: EI, coping and wellbeing in fertility clinic attendees- Version 1.0

Name of Researcher: Alice Gardner

Please initial box

1. I confirm that I have read and understand the information sheet dated 11/3/10 (Version 2.0) for the above study. I have had the opportunity to consider the information. If I had any questions, they have been 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 medical care or legal rights being affected. ☐

3. I agree to take part in the above study. ☐

Name of patient	Date	Signature
_____	_____	_____
Name of person taking consent	Date	Signature
_____	_____	_____

When completed: 1 for participant; 1 for researcher site file; 1 (original) to be kept in medical notes.

Appendix J- Demographic and infertility questionnaire

Age: .....years

Ethnicity:

- O White O Asian
- O Black O Chinese
- O other (please state):

.....

Would you describe yourself as British?

- O yes
- O no

Relationship status (please tick any that apply):

- O single
- O engaged
- O married
- O divorced
- O separated
- O cohabiting

Highest level of education:

- O age 16 (e.g. GCSEs)
- O age 16-18 (e.g. AS/A-levels)
- O diploma
- O degree
- O post-graduate qualification

Current employment status:

- O full-time employment
- O part-time employment
- O unemployed

Have you ever seen a health professional for help dealing with emotional problems?

- O no, never
- O yes, before my fertility problems started
- O yes, since experiencing fertility problems

How long have you been trying to become pregnant?

- O up to 1.5 years
- O 1.5 - 3 years
- O more than 3 years

Have you ever been pregnant before?

- O no (primary infertility)
- O yes (secondary infertility)

Please choose which best describes you:

- O I have no children
- O I have a child or children from a previous partner
- O I have no biological children but have fostered/adopted a child or children

Where do you think your fertility problems come from?

- O mainly me
- O mainly my partner
- O both me and my partner
- O don't know

Have you ever had treatment for infertility in the past?

- O **no**
- O **yes (please describe below):**

.....

.....

When did you first receive a diagnosis about your fertility problems? (if you have not yet had a diagnosis, please write N/A)

.....

Appendix K- Brief COPE

These items deal with ways you've been coping with the stress in your life since you have been having fertility problems. There are many ways to try to deal with problems. These items ask what you've been doing to cope with this one. Obviously, different people deal with things in different ways, but I'm interested in how you've tried to deal with it. Each item says something about a particular way of coping. I want to know to what extent you've been doing what the item says. How much or how frequently. Don't answer on the basis of whether it seems to be working or not—just whether or not you're doing it. Try to rate each item separately in your mind from the others. Make your answers as true FOR YOU as you can.

	Not at all	A little bit	A medium amount	A lot
1. I've been turning to work or other activities to take my mind off things.				
2. I've been concentrating my efforts on doing something about the situation I'm in.				
3. I've been saying to myself "this isn't real."				
4. I've been using alcohol or other drugs to make myself feel better.				
5. I've been getting emotional support from others.				
6. I've been giving up trying to deal with it.				
7. I've been taking action to try to make the situation better.				
8. I've been refusing to believe that it has happened.				
9. I've been saying things to let my unpleasant feelings escape.				
10. I've been getting help and advice from other people.				
11. I've been using alcohol or other drugs to help me get through it.				
12. I've been trying to see it in a different light, to make it seem more positive.				
13. I've been criticizing myself.				
14. I've been trying to come up with a strategy about what to do.				
15. I've been getting comfort and understanding from someone.				
16. I've been giving up the attempt to cope.				
17. I've been looking for something good in what is happening.				
18. I've been making jokes about it.				
19. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.				
20. I've been accepting the reality of the fact that it has happened.				
21. I've been expressing my negative feelings.				
22. I've been trying to find comfort in my religion or spiritual beliefs.				
23. I've been trying to get advice or help from other people about what to do.				
24. I've been learning to live with it.				
25. I've been thinking hard about what steps to take.				
26. I've been blaming myself for things that happened.				
27. I've been praying or meditating.				
28. I've been making fun of the situation.				

Appendix L- Schutte Emotional Intelligence Scale

Please tick to say how much you agree or disagree with each statement:

		Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly Agree
1.	I know when to speak about my personal problems to others.					
2.	When I am faced with obstacles, I remember times I faced similar obstacles and overcame them.					
3.	I expect that I will do well on most things I try.					
4.	Other people find it easy to confide in me.					
5.	I find it hard to understand the nonverbal messages of other people.					
6.	Some of the major events of my life have led me to re-evaluate what is important and not important.					
7.	When my mood changes, I see new possibilities.					
8.	Emotions are some of the things that make my life worth living.					
9.	I am aware of my emotions as I experience them.					
10.	I expect good things to happen.					
11.	I like to share my emotions with others.					
12.	When I experience a positive emotion, I know how to make it last.					
13.	I arrange events others enjoy.					
14.	I seek out activities that make me happy.					
15.	I am aware of the nonverbal messages I send to others.					
16.	I present myself in a way that makes a good impression on others.					
17.	When I am in a positive mood, solving problems is easy for me.					
18.	By looking at their facial expressions, I recognize the emotions people are experiencing.					
19.	I know why my emotions change.					
20.	When I am in a positive mood, I am able to come up with new ideas.					
21.	I have control over my emotions.					
22.	I easily recognize my emotions as I experience them.					
23.	I motivate myself by imagining a good outcome to tasks I take on.					
24.	I compliment others when they have done something well.					
25.	I am aware of the nonverbal messages other people send.					
26.	When another person tells me about an important event in his or her life, I almost feel as though I have experienced this event myself.					
27.	When I feel a change in emotions, I tend to come up with new ideas.					
28.	When I am faced with a challenge, I give up because I believe I will fail.					
29.	I know what other people are feeling just by looking at them.					
30.	I help other people feel better when they are down.					
31.	I use good moods to help myself keep trying in the face of obstacles.					
32.	I can tell how people are feeling by listening to the tone of their voice.					
33.	It is difficult for me to understand why people feel the way they do.					

Appendix M- Hospital Anxiety and Depression Scale (removed for hard binding)

Appendix N- Psychological General Well-Being Index

READ: This section contains questions about how you feel and how things have been going for you over the past month. For each question tick (☑) the answer which best applies to you.

1. How have you been feeling in general during the past month?
(Tick one box)

In excellent spirits	☐ 5
In very good spirits	☐ 4
In good spirits mostly	☐ 3
I have been up and down in spirits a lot	☐ 2
In low spirits mostly	☐ 1
In very low spirits	☐ 0

2. How often were you bothered by any illness, infirmity, aches or pains during the past month?
(Tick one box)

Every day	☐ 0
Almost every day	☐ 1
About half of the time	☐ 2
Now and then, but less than half the time	☐ 3
Rarely	☐ 4
None of the time	☐ 5

3. Did you feel depressed during the past month?
(Tick one box)

Yes - to the point where I felt like killing myself	☐ 0
Yes - to the point where I did not care about anything	☐ 1
Yes - very depressed almost every day	☐ 2
Yes - quite depressed several times	☐ 3
Yes - a little depressed now and again	☐ 4
No - never felt depressed at all	☐ 5

4. **Have you been in firm control of your behaviour, thoughts, emotions or feelings during the past month?**
(Tick one box)

Yes, definitely so	☐ 5
Yes, for the most part	☐ 4
Generally so	☐ 3
Not too well	☐ 2
No, and I am somewhat disturbed	☐ 1
No, and I am very disturbed	☐ 0

5. **Have you been bothered by nervousness or your "nerves" during the past month?**
(Tick one box)

Extremely so - to the point where I could not work or take care of things .	☐ 0
Very much so	☐ 1
Quite a bit	☐ 2
Somewhat - enough to bother me	☐ 3
A little	☐ 4
Not at all	☐ 5

6. **How much energy or vitality did you have or feel during the past month?**
(Tick one box)

Very full of energy - lots of vitality	☐ 5
Fairly energetic most of the time	☐ 4
My energy level varied quite a bit	☐ 3
Generally low in energy or vitality	☐ 2
Very low in energy or vitality most of the time	☐ 1
No energy or vitality at all - I felt drained, sapped	☐ 0

7. **I felt downhearted and low during the past month.**
(Tick one box)

None of the time	☐ 5
A little of the time	☐ 4
Some of the time	☐ 3
A good bit of the time	☐ 2
Most of the time	☐ 1
All of the time	☐ 0

8. **Were you generally tense or did you feel any tension during the past month?**
(Tick one box)

Yes - extremely tense, most or all of the time	☐ 0
Yes - very tense most of the time	☐ 1
Not generally tense, but did feel fairly tense several times	☐ 2
I felt a little tense a few times	☐ 3
My general tension level was quite low	☐ 4
I never felt tense or any tension at all	☐ 5

9. **How happy, satisfied or pleased have you been with your personal life during the past month?**
(Tick one box)

Extremely happy - could not have been more satisfied or pleased	☐ 5
Very happy most of the time	☐ 4
Generally satisfied - pleased	☐ 3
Sometimes fairly happy, sometimes fairly unhappy	☐ 2
Generally dissatisfied or unhappy	☐ 1
Very dissatisfied or unhappy most or all the time	☐ 0

10. **Did you feel healthy enough to carry out things you like to do or had to do during the past month?**
(Tick one box)

Yes - definitely so	☐ 5
For the most part	☐ 4
Health problems limited me in some important ways	☐ 3
I was just healthy enough to take care of myself	☐ 2
I needed some help in taking care of myself	☐ 1
I needed someone to help me with most or all of the things I had to do	☐ 0

11. **Have you felt so low, discouraged, hopeless, or had so many problems that you wondered if anything was worthwhile during the past month?**
(Tick one box)

Extremely so - to the point where I have just about given up	☐ 0
Very much so	☐ 1
Quite a bit	☐ 2
Some - enough to bother me	☐ 3
A little bit	☐ 4
Not at all	☐ 5

12. **I woke up feeling fresh and rested during the past month.**
(Tick one box)

None of the time	☐ 0
A little of the time	☐ 1
Some of the time	☐ 2
A good bit of the time	☐ 3
Most of the time	☐ 4
All of the time	☐ 5

13. **Have you been concerned, worried, or had any fears about your health during the past month?**
(Tick one box)

Extremely so	☐ 0
Very much so	☐ 1
Quite a bit	☐ 2
Some, but not a lot	☐ 3
Practically never	☐ 4
Not at all	☐ 5

14. **Have you had any reason to wonder if you were losing your mind, your memory or losing control over the way you act, talk, think, feel during the past month?**
(Tick one box)

Not at all	☐ 5
Only a little	☐ 4
Some - but not enough to be concerned or worried about	☐ 3
Some and I have been a little concerned	☐ 2
Some and I am quite concerned	☐ 1
Yes, very much so and I am very concerned	☐ 0

15. **My daily life was full of things that were interesting to me during the past month.**
(Tick one box)

None of the time	☐ 0
A little of the time	☐ 1
Some of the time	☐ 2
A good bit of the time	☐ 3
Most of the time	☐ 4
All of the time	☐ 5

16. **Did you feel active, vigorous, or dull, sluggish during the past month?**
(Tick one box)

Very active, vigorous every day	☐ 5
Mostly active, vigorous - never really dull, sluggish	☐ 4
Fairly active, vigorous - seldom dull, sluggish	☐ 3
Fairly dull, sluggish - seldom active, vigorous	☐ 2
Mostly dull, sluggish - never really active, vigorous	☐ 1
Very dull, sluggish every day	☐ 0

17. **Have you been anxious, worried or upset during the past month?**
(Tick one box)

Extremely so - to the point of being sick or almost sick	☐ 0
Very much so	☐ 1
Quite a bit	☐ 2
Some - enough to bother me	☐ 3
A little bit	☐ 4
Not at all	☐ 5

18. **I was emotionally stable and sure of myself during the past month.**
(Tick one box)

None of the time	☐ 0
A little of the time	☐ 1
Some of the time	☐ 2
A good bit of the time	☐ 3
Most of the time	☐ 4
All of the time	☐ 5

19. **Did you feel relaxed, at ease or agitated, on edge or wound up during the past month?**
(Tick one box)

Felt relaxed and at ease the whole month	☐ 5
Felt relaxed and at ease most of the time	☐ 4
Generally felt relaxed but at times felt fairly on edge	☐ 3
Generally felt agitated but at times felt fairly relaxed	☐ 2
Felt agitated, on edge or wound up most of the time	☐ 1
Felt agitated, on edge or wound up the whole month	☐ 0

20. I felt cheerful, lighthearted during the past month.
(Tick one box)

None of the time	☐ 0
A little of the time	☐ 1
Some of the time	☐ 2
A good bit of the time	☐ 3
Most of the time	☐ 4
All of the time	☐ 5

21. I felt tired, worn out, used up or exhausted during the past month.
(Tick one box)

None of the time	☐ 5
A little of the time	☐ 4
Some of the time	☐ 3
A good bit of the time	☐ 2
Most of the time	☐ 1
All of the time	☐ 0

22. Have you been under or felt you were under any strain, stress or pressure during the past month?
(Tick one box)

Yes - almost more than I could bear or stand	☐ 0
Yes - quite a bit of pressure	☐ 1
Yes, some - more than usual	☐ 2
Yes, some - but about usual	☐ 3
Yes - a little	☐ 4
Not at all	☐ 5

Appendix O- Additional information about 'trait' versus 'ability' EI and choice of EI measure

The concept of emotional intelligence (EI) was first devised around twenty years ago (Mayer & Salovey, 1993; Salovey & Mayer, 1989). In essence, it involves the abilities to perceive, understand and use emotions, in order to guide thought and action.

Although there has been a considerable volume of research purporting to study EI, there has been a lack of consistency among research from different groups in terms of what is and is not regarded as part of EI. The original researchers intended it to be purely ability-based (consistent with other kinds of intelligence), and devised an objective test, the Multi-Factor Emotional Intelligence Test, (MEIS, Mayer, Caruso, & Salovey, 1999) to measure it. However, others have adopted a 'trait' view, seeing EI as encompassing dispositional qualities, such as self-esteem and optimism. It has accordingly also been measured using self-report questionnaires and observer ratings.

The original inventors have regarded the 'trait' conceptualisation as inappropriate and have commented that although this widening of the concept might have been motivated by enthusiasm, it has reduced clarity and impeded general understanding in the field (Mayer, Salovey, & Caruso, 2008). Other researchers have viewed the two conceptualisations as equally valid and useful (e.g. Schutte et al., 1998). In any case, it is important to maintain a distinction between these two conceptualisations in viewing the EI literature, since they are not highly correlated with one another (Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006).

Recent reviews have been carried out to investigate how both types of EI relate to career performance (Van Rooy & Viswesvaran, 2004), sport (Meyer & Fletcher, 2007) and mental and physical health (Schutte et al., 2007). Another review has considered the relationships between EI and general cognitive ability, and EI and the Big Five factors of personality (Mayer et al., 2008).

This appendix will begin with a review of the literature linking EI with mental health, physical health and distress. This will be followed by identification and description of existing measurement tools (including psychometric properties) for both 'ability' and 'trait' EI. Finally, there will be a consideration of how this knowledge might be applied to improve our understanding of distress in women experiencing infertility.

Emotional intelligence, distress, and mental and physical health

The clinical relevance of EI is not difficult to imagine. The ability to understand and regulate emotions is central to a variety of psychological disorders, including schizophrenia, mood disorders and anxiety disorders. EI has already been investigated in relation to a large number of psychological disorders, health, general wellbeing and ability to cope with stress.

Findings from a recent meta-analytic review

A meta-analytic review of the relationship between both trait and ability EI with mental and physical health has been carried out (Schutte et al., 1998), outlining results from 35 studies on 7898 patients. EI was found to relate to good mental, physical and psychosomatic (mixed) health with medium effect sizes (r= .22 to.31) explaining, on average, 5-9% of the health variance.

Correlations of trait EI with mental health were greater than those of ability EI and mental health, and the correlation between *ability* EI and mental health were not significant. The strongest correlations of trait EI and mental health were found in studies where trait EI was measured using the Emotional Quotient inventory (EQ-i, Bar-On, Brown, Kirkcaldy, & Thomé, 2000). The researchers suggested that this could be because the EQ-i, of all the trait measures, comprises the greatest range of attributes, including the ability to tolerate stress, and the quality of interpersonal relationships.

Three explanations were suggested for the lesser association between *ability* EI and health compared to trait EI and health:

- it could relate to the greater 'latency' (intrinsic nature) of this construct; trait EI, in contrast, might relate more closely to actual behaviour and thus to mental health, compared to ability EI.
- common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) could have affected the results, since self-reports were used to assess both trait EI and mental health
- it could be that the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT, used to measure ability EI, Mayer, Brackett, & Ivcevic, 2002) does not measure EI adequately (Brody, 2004b)

There were too few relevant studies in the review to compare ability with trait EI for physical and psychosomatic health. The authors suggested that EI might be protective of mental health, and they recommended that EI-improving interventions be investigated for their efficacy in ameliorating mental health.

Ability EI

Few studies have looked at ability EI in relation to health or distress (Saklofske, Austin, Galloway, & Davidson, 2007). One study (Matthews et al., 2006) found that although ability EI was related to lower avoidance coping and worry states, it could not predict degree of task-induced stress. Another study investigated whether individuals with social phobia have reduced EI in comparison to the general population (Jacobs et al., 2008). This was found not to be the case (there was no significant difference in EI between experimental and control groups) but there was a significant negative correlation of EI with severity of social anxiety. This would suggest that although a lower level of EI might not be causally related to development of social phobia, it might affect the impact of systems that are causally related.

Trait EI

The volume of research connecting trait EI with mental health and distress is much greater, and there have been some interesting findings in this area. A study examining **disordered eating** (DE) attitudes among a sample of 92 Greek university students compared levels of trait EI in those with DE attitudes (23% of the sample) and those without (Costarelli, Demerzi, & Stamou, 2009). Those with DE attitudes had significantly lower trait emotional intelligence (emotional self-awareness, empathy, interpersonal relationships, stress management and happiness) than those without DE attitudes.

EI has also been investigated in terms of its protective influence against the use of **self-harm** as a coping strategy in adolescents (Mikolajczak et al., 2009). 490 adolescents completed measures of trait EI, coping styles and self-harm behaviours. It was found that there was a mediating effect of coping strategies between EI and self-harm behaviours, and that those higher in EI were less likely ever to have self-harmed. Also, of those who had self-harmed, those with higher EI were less likely to have had suicide as their intention.

In another study (Ciarrochi, Deane, Wilson, & Rickwood, 2002), **intention to seek help** among 137 adolescents (aged 16-18) was examined in relation to 'emotional competence'. It was found that those with low social competence were least likely to intend to seek help from non-professional sources. This was only partially accounted-for by 'existing social support'. Interestingly, the *intention* to seek professional help was not related to emotional competence.

Another study (Chan, 2004) investigated emotional intelligence in relation to **social coping** and distress among gifted Chinese students. Students (N=624, aged 9-19) completed a Chinese version of the SEIS (see below), a social coping questionnaire (Chinese SCQ-12) and the general health questionnaire (Chinese GHQ-20). Structural equation modelling was used to test the hypothesised mediating effect of social coping between emotional intelligence and distress. It was found that those high in 'self-relevant' EI were more likely to use avoidant coping, and those high in 'other-relevant' EI were more likely to engage in social-interaction coping. Both these strategies resulted in reduced distress compared to those with lower EI, who used more avoidant coping and less social-interaction coping.

Extremera, Duran and Rey (2009) investigated the moderating effect of EI ('trait meta-mood') and stress on **life satisfaction**. Undergraduate students (N=349) completed the TMMS (see below), along with measures of optimism, perceived stress and life satisfaction. As expected, there was a positive relationship between EI and life satisfaction. This endured even when dispositional optimism and perceived stress were controlled for. Mood clarity was associated with greater life satisfaction in the presence of high perceived stress.

Another study examined the extent to which social support and EI can predict **subjective wellbeing** (Gallagher & Vella-Brodrick, 2008). Adults (N=267, aged 18-80) from the general population were asked to complete measures of subjective well-being, satisfaction with life, social support, trait EI, personality and social desirability. EI was found to have a significant relationship with well-being and positive affect when other variables were controlled for.

Another recent study (Mikolajczak et al., 2008) investigated the **regulation of emotions**, in relation to EI. It was found that high EI assisted both the regulation of negative emotions and the maintenance of positive emotions, which the authors suggested could account for the typical patterns of emotions found in people with high versus low EI.

Linking emotional intelligence with health and coping

A key study for the development of the present study investigated EI in relation to **coping, health locus of control** and personality, and the impact of all these factors on health behaviours (Saklofske et al., 2007). Students (N=364) were assessed on these factors. High EI was found to be significantly positively correlated with use of 'rational' coping and negatively with emotion-focused coping, which replicated previous findings. In addition, EI was positively associated with 'internal' health locus (perceived personal control), negatively associated with 'chance' health locus (lack of perceived control) and not associated with 'powerful others' health locus (e.g. medical professionals perceived as having control). The authors concluded that EI and how it relates to coping and health warrants further investigation.

Another key study investigated EI in relation to the menopause (Bauld & Brown, 2009), examining the relationships between trait EI, distress, psychosocial factors and physical health. Trait EI was measured using the SEIS (see below), and was found to be negatively correlated with severity of **menopausal symptoms** and physical health. Psychological ill-health was found to partially mediate between EI and menopausal symptoms/physical health, suggesting that low EI increases the risk of psychological distress, leading to worsening of physical symptoms, perhaps through lack of adaptive coping.

Measurement tools for ability EI

The first measure devised for ability EI was the Multi-factor Emotional Intelligence Scale (MEIS), developed by the same group who originally conceptualised EI (Mayer et al., 1999). This was later succeeded by the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT, Mayer, Salovey, Caruso, & Sitarenios, 2003). This consists of 141 items divided among eight tasks, two each for the four aspects of ability EI (perceiving emotions, using emotions to facilitate thinking, understanding emotions and managing emotions). Scoring is via consensus from either a group of emotions experts or the general population (these methods correlate strongly, Mayer et al., 2003).

The scoring procedure has been criticised, however. Brody (2004a) points out that in tests of cognitive ability, it is possible for a person to answer a question correctly without that answer being that which most people would give, for example if the person had uncommonly high ability. This is not possible with consensus scoring, as on the MSCEIT. Mayer, Salovey and Caruso (2004) responded to this by pointing out that this inconsistency may simply reflect a true difference between EI and general intelligence. However, they did concede that this argument might have some grounds. In some EI-related areas such as lie-detecting, only a very small percentage of the population have good ability (Ekman, O'Sullivan, & Frank, 1999), which would make consensus-scoring an inappropriate tool for assessing 'correctness.'

Measurement tools for trait EI

Tools which draw on the trait conceptualisation of EI generally require respondents to give true/false or Likert-scale answers to self-statements, e.g. 'I understand my emotions well'.

A summary of trait EI measures and their properties is given in Table O1, below.

Table O1 Trait EI measures and their psychometric properties

Measure	Devised by	Items (domains)	Methods	Reliability	Validity
Trait Meta Mood Scale (TMMS)	Salovey, Mayer, Goldman & Palfai (1995)	48 (attention, clarity, repair)	self-report (Likert scale)	Internal consistency reliability=.82	provides an index of what it aims to measure (Salovey et al., 1995)
Emotional Competence Inventory (ECI)	Boyatzis & Sala (Boyatzis & Sala, 2004)	110 (4; self-awareness, social awareness, self-management, social skills)	self-ratings, peer ratings, supervisor ratings	Very few peer-reviewed studies. Internal consistency reliability for self-ratings= .61-.85.; peer & supervisor ratings, .80-.95.	Adequate predictive validity but substantial overlap with Big Five (Van Rooy & Viswesvaran, 2004)
Bar-On Emotional Quotient Inventory (EQ-i)	Bar-On (1997)	133 (5; intrapersonal, interpersonal, adaptability, general mood, stress-management)	self-report (approx. 30 mins) (Bar-On, 2000)	Adequate test-retest reliability=.73 (Bar-On, 1997)	Acceptable predictive validity (p=.20) (Van Rooy & Viswesvaran, 2004) Convergent/ discriminant validity poor (Brackett & Mayer, 2003), (Conte, 2005)
Emotional Intelligence Scale (SEIS)	Schutte et al. (1998)	33 (1, though this has been criticised, Petrides & Furnham, 2000)	self-report (Likert scale)	Internal consistency reliability=.90 (Petrides & Furnham, 2000)	Face validity good, some evidence of construct, discriminant and predictive validities

As with the measurement of ability EI, the measurement of trait EI has not gone without criticism. Mayer, Salovey and Caruso (2008) outline four main concerns:

- poor understanding of the question
- lack of respondent knowledge about the accuracy of their emotional perceptions
- influence of mood
- bias towards favourable self-evaluation

Although both trait and ability EI measurement methods have both been criticised, it is for very different reasons. It is perhaps not surprising that with the respective concerns about validity, the correlation between ability and trait EI is low (as found by Brackett et al., 2006).

Predictive, concurrent, discriminant and incremental validity of EI measures

Although EI has been popularised as having more predictive validity for performance at work than IQ (Goleman, 1995), this claim, as has been repeatedly pointed out (Mayer et al., 2008) is unsubstantiated by empirical research.

Ability EI, measured with the MSCEIT, has been found to correlate with verbal intelligence (r=.35) and to a lesser extent, with perceptual and organisational ability (Ciarrochi, Chan, & Caputi, 2000). According to Mayer, Salovey and Caruso (2008), these correlations are to be expected due to the 'intelligence' component of ability EI.

On the other hand, these researchers argue that EI should *not* correlate with personality factors, such as the Big Five (Intraversion-Extraversion, Neuroticism-Stability, Openness-Closedness, Agreeableness-Disagreeableness and Conscientiousness-Carelessness), because even if people are sociable or agreeable, this will not necessarily have a bearing on their emotional abilities. A possible exception they identified was

Openness, since this is correlated with intelligences in general (Mayer & Salovey, 1993). Brackett and Mayer (2003) found that ability EI, measured using the MSCEIT (version 2.0), correlated with Openness (r=.25) and with Agreeableness (r=.28), and to a lesser extent with the rest of the Big Five (Extraversion: r=.11, Neuroticism: r=-.08 and with Conscientiousness: r=.03).

This is in contrast to trait EI measures, which typically find much higher correlations with the Big Five. For example, on personality measures, Neuroticism correlates with trait EI (r=.57 to .70) to a similar extent as personality measures correlate *with each other* on Neuroticism (Mayer et al., 2008). Trait EI measures also correlate least with Openness and Agreeableness out of all the personality factors, leading Brackett and Mayer (2003) to suggest that trait EI measures do not in fact capture EI at all but rather other variables relevant to motivations, social skills and other areas of personality.

Additional issues with the divergent validity of trait EI were raised by Kluemper (2008) who measured trait EI, personality, IQ, core-self evaluations, social desirability, coping, stress and life-satisfaction. He found that core-self evaluations and social desirability accounted for a large proportion (62%) of the variance in trait EI. Also, although EI had incremental validity in predicting coping, stress and life-satisfaction when IQ and the Big Five were controlled for, this incremental validity was largely reduced when core-self evaluations and social desirability were added into the equation.

Returning to ability EI, Rossen and Kranzler (2009) examined incremental validity of the MSCEIT (version 2.0) for prediction of academic achievement, psychological wellbeing, peer attachment, positive relationships and alcohol use, when general cognitive ability and the Big Five personality factors were controlled for. Undergraduate students (N=150) from a range of academic disciplines took part, undergoing standardised testing for cognitive ability (Wonderlic Personnel Test, WPT, Wonderlic, 1992), personality (International Personality Item Pool, IPIP, Goldberg, 1999) and ability EI (MSCEIT).

The results of this study for correlations of the MSCEIT with general cognitive ability and the Big Five were very similar to those found previously (Mayer et al., 2008, described above). EI was found to have incremental validity for predicting only positive interpersonal relationships (.11, accounting for 1% of the variance) and alcohol use (-.21, 4% of the variance), not academic achievement, psychological well-being or peer attachment. However, the researchers emphasised that the small amount of variance accounted for is likely to be a severe underestimate, owing to the large number of variables controlled for. The practical and theoretical significance of these relationships is likely to be much greater than it would seem.

Conclusions and implications

This appendix has highlighted a number of theoretical, conceptual and measurement issues pertinent to both trait and ability EI. EI (primarily trait EI) has been investigated in relation to a large number of health and distress factors in recent years, showing a range of significant associations. These include disordered eating and self-harm behaviours, intention to seek non-professional help, social coping, life satisfaction, general wellbeing, regulation of emotions, health locus of control and physical symptoms of the menopause. This literature has suggested trait EI may have predictive validity for emotional distress, which could prove useful for identifying patients most at risk of adverse reactions to physical illness. This could also have implications for early or preventive emotionally-oriented interventions, which could eventually be used routinely with such patients, to reduce distress and improve coping strategies.

Some evidence is already emerging for the possibility of improving EI (Wing et al., 2006), even with effects lasting for at least six months (Nelis, Quoidbach, Mikolajczak, & Hansenne, 2009). This latter study specifically increased participants' ability to identify their own emotions and to manage these. It remains to be seen whether these effects will translate into improved health outcomes.

At present it would seem that a strong enough rationale for further investigation of ability EI in relation to distress does not exist. Trait El would appear to be a more

fruitful and appropriate area for further investigation. Although trait EI measures may lack objectivity compared to ability EI measures, the incremental validity of trait EI over and above other factors (IQ, personality, perceived stress, social desirability and social support) for the prediction of health and distress, is sufficient to make it worthy of further investigation in medical patients.

References

Bar-On, R. (1997). *Bar-on emotional quotient inventory: User's manual.* New York: Multi-Health Systems.

Bar-On, R. (2000). Emotional and social intelligence: Insights from the emotional quotient inventory. In R. Bar-On, J. D. A. Parker, R. Bar-On & J. D. A. Parker (Eds.), *The handbook of emotional intelligence: Theory, development, assessment, and application at home, school, and in the workplace.* (pp. 363-388). San Francisco, CA US: Jossey-Bass.

Bauld, R., & Brown, R. F. (2009). Stress, psychological distress, psychosocial factors, menopause symptoms and physical health in women. *Maturitas, 62*(2), 160-165. doi:10.1016/j.maturitas.2008.12.004

Boyatzis, R. E., & Sala, F. (2004). Measuring emotional intelligence: Common ground and controversy. In G. Geher (Ed.), (pp. 147-180). Hauppauge, New York: Nova Science Publishers.

Brackett, M. A., & Mayer, J. D. (2003). Convergent, discriminant, and incremental validity of competing measures of emotional intelligence. *Personality and Social Psychology Bulletin, 29*(9), 1147-1158. doi:10.1177/0146167203254596

Brackett, M. A., Rivers, S. E., Shiffman, S., Lerner, N., & Salovey, P. (2006). Relating emotional abilities to social functioning: A comparison of self-report and

performance measures of emotional intelligence. *Journal of Personality and Social Psychology, 91*(4), 780-795. doi:10.1037/0022-3514.91.4.780

Brody, N. (2004a). Emotional intelligence: Science and myth. *Intelligence, 32*(1), 109-111. doi:10.1016/S0160-2896(03)00059-X

Brody, N. (2004b). What cognitive intelligence is and what emotional intelligence is not. *Psychological Inquiry, 15*(3), 234-238.

Chan, D. W. (2004). Social coping and psychological distress among chinese gifted students in hong kong. *Gifted Child Quarterly, 48*(1), 30-41. doi:10.1177/001698620404800104

Ciarrochi, J.V, Deane, F. P., Wilson, C. J., & Rickwood, D. (2002). Adolescents who need help the most are the least likely to seek it: The relationship between low emotional competence and low intention to seek help. *British Journal of Guidance & Counselling, 30*(2), 173-188. doi:10.1080/03069880220128047

Ciarrochi, J. V., Chan, A. Y. C., & Caputi, P. (2000). A critical evaluation of the emotional intelligence construct. *Personality and Individual Differences, 28*(3), 539-561. doi:10.1016/S0191-8869(99)00119-1

Conte, J. M. (2005). A review and critique of emotional intelligence measures. *Journal of Organizational Behavior, 26*(4), 433-440. doi:10.1002/job.319

Costarelli, V., Demerzi, M., & Stamou, D. (2009). Disordered eating attitudes in relation to body image and emotional intelligence in young women. *Journal of Human Nutrition and Dietetics, 22*(3), 239-245. doi:10.1111/j.1365-277X.2009.00949.x

Ekman, P., O'Sullivan, M., & Frank, M. G. (1999). A few can catch a liar. *Psychological Science, 10*(3), 263-266. doi:10.1111/1467-9280.00147

Extremera, N., Duran, A., & Rey, L. (2009). The moderating effect of trait meta-mood and perceived stress on life satisfaction. *Personality and Individual Differences, 47*(2), 116-121. doi:10.1016/j.paid.2009.02.007

Gallagher, E. N., & Vella-Brodrick, D. A. (2008). Social support and emotional intelligence as predictors of subjective well-being. *Personality and Individual Differences, 44*(7), 1551-1561. doi:10.1016/j.paid.2008.01.011

Goleman, D. P. (1995). *Emotional intelligence: Why it can matter more than IQ for character, health and lifelong achievement*. New York: Bantam Books.

Jacobs, M., Snow, J., Geraci, M., Vythilingam, M., Blair, R. J. R., Charney, D. S., . . . Blair, K. S. (2008). Association between level of emotional intelligence and severity of anxiety in generalized social phobia. *Journal of Anxiety Disorders, 22*(8), 1487-1495. doi:10.1016/j.janxdis.2008.03.003

Kluemper, D. H. (2008). Trait emotional intelligence: The impact of core-self evaluations and social desirability. *Personality and Individual Differences, 44*(6), 1402-1412. doi:10.1016/j.paid.2007.12.008

Matthews, G., Emo, A. K., Funke, G., Zeidner, M., Roberts, R. D., Costa, P. T.,Jr., & Schulze, R. (2006). Emotional intelligence, personality, and task-induced stress. *Journal of Experimental Psychology-Applied, 12*(2), 96-107. doi:10.1037/1076-898X.12.2.96

Mayer, J. D., Brackett, M. A., & Ivcevic, Z. (2002). Emotion in the assessment of personality. *Psychological Inquiry, 13*(1), 77-80.

Mayer, J. D., Caruso, D. R., & Salovey, P. (1999). Emotional intelligence meets traditional standards for an intelligence. *Intelligence, 27*(4), 267-298. doi:10.1016/S0160-2896(99)00016-1

Mayer, J. D., & Salovey, P. (1993). The intelligence of emotional intelligence. *Intelligence, 17*(4), 433-442. doi:10.1016/0160-2896(93)90010-3

Mayer, J. D., Salovey, P., & Caruso, D. R. (2004). A further consideration of teh issues of emotional intelligence. *Psychological Inquiry, 15*(3), 249-255. doi:10.1207/s15327965pli1503_05

Mayer, J. D., Salovey, P., & Caruso, D. R. (2008). Emotional intelligence - new ability or eclectic traits? *American Psychologist, 63*(6), 503-517. doi:10.1037/0003-066X.63.6.503

Mayer, J. D., Salovey, P., Caruso, D. R., & Sitarenios, G. (2003). Measuring emotional intelligence with the MSCEIT V2.0. *Emotion (Washington D C), 3*(1), 97-105. doi:10.1037/1528-3542.3.1.97

Meyer, B. B., & Fletcher, T. B. (2007). Emotional intelligence: A theoretical overview and implications for research and professional practice in sport psychology. *Journal of Applied Sport Psychology, 19*(1), 1-15. doi:10.1080/10413200601102904

Mikolajczak, M., Nelis, D., Hansenne, M., & Quoidbach, J. (2008). If you can regulate sadness, you can probably regulate shame: Associations between trait emotional

intelligence, emotion regulation and coping efficiency across discrete emotions. *Personality and Individual Differences, 44*(6), 1356-1368. doi:10.1016/j.paid.2007.12.004

Mikolajczak, M., Petrides, K. V., & Hurry, J. (2009). Adolescents choosing self-harm as an emotion regulation strategy: The protective role of trait emotional intelligence. *British Journal of Clinical Psychology, 48*, 181-193. doi:10.1348/014466508X386027

Nelis, D., Quoidbach, J., Mikolajczak, M., & Hansenne, M. (2009). Increasing emotional intelligence: (how) is it possible? *Personality and Individual Differences, 47*(1), 36-41. doi:10.1016/j.paid.2009.01.046

Petrides, K. V., & Furnham, A. (2000). On the dimensional structure of emotional intelligence. *Personality and Individual Differences, 29*(2), 313-320. doi:10.1016/S0191-8869(99)00195-6

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879-903. doi:10.1037/0021-9010.88.5.879

Rossen, E., & Kranzler, J. H. (2009). Incremental validity of the mayer-salovey-caruso emotional intelligence test version 2.0 (MSCEIT) after controlling for personality and intelligence. *Journal of Research in Personality, 43*(1), 60-65. doi:10.1016/j.jrp.2008.12.002

Saklofske, D. H., Austin, E. J., Galloway, J., & Davidson, K. (2007). Individual difference correlates of health-related behaviours: Preliminary evidence for links

between emotional intelligence and coping. *Personality and Individual Differences, 42*(3), 491-502. doi:10.1016/j.paid.2006.08.006

Salovey, P., & Mayer, J. D. (1989). Emotional intelligence. *Imagination, Cognition and Personality, 9*(3), 185-211.

Salovey, P., Mayer, J. D., Goldman, S. L., & Palfai, T. P. (1995). Emotional attention, clarity, and repair: Exploring emotional intelligence using the trait meta-mood scale. In J. W. Pennebaker, & J. W. Pennebaker (Eds.), *Emotion, disclosure, & health.* (pp. 125-154). Washington, DC US: American Psychological Association. doi:10.1037/10182-006

Schutte, N. S., Malouff, J. M., Hall, L. E., Haggerty, D. J., Cooper, J. T., Golden, C. J., & Dornheim, L. (1998). Development and validation of a measure of emotional intelligence. *Personality and Individual Differences, 25*(2), 167-177. doi:10.1016/S0191-8869(98)00001-4

Schutte, N. S., Malouff, J. M., Thorsteinsson, E. B., Bhullar, N., & Rooke, S. E. (2007). A meta-analytic investigation of the relationship between emotional intelligence and health. *Personality and Individual Differences, 42*(6), 921-933. doi:10.1016/j.paid.2006.09.003

Van Rooy, D. L., & Viswesvaran, C. (2004). Emotional intelligence: A meta-analytic investigation of predictive validity and nomological net. *Journal of Vocational Behavior, 65*(1), 71-95. doi:10.1016/S0001-8791(03)00076-9

Wing, J. F., Schutte, N. S., & Byrne, B. (2006). The effect of positive writing on emotional intelligence and life satisfaction. *Journal of Clinical Psychology, 62*(10), 1291-1302. doi:10.1002/jclp.20292

Appendix P- Decisions regarding the use of the Brief COPE

The decision to use the Brief COPE in this research was not a difficult one, due to its almost universal usage in existing work in the health literature, the broad range of coping strategies it covers, the fact that it can be used as a state rather than trait measure of coping (that is, specifically in relation to coping with infertility), its short length and the fact that it is freely available for research use. However, the planning of the analysis of the results in terms of approach and avoidance coping was less straightforward.

Different researchers have treated their Brief COPE results differently in terms of determining what the factors should be and which factors or items relate to the different strands of coping. In the original (Carver, 1997b) paper for the Brief COPE, the 28 items are organised into 14 subscales. Some researchers utilising the Brief COPE, however, have chosen to carry out their own exploratory factor analysis on the 28 items of the Brief COPE. One such group is Hastings et al. (2005). They delineated four factors; active avoidance coping, problem-focused coping, positive coping and religious/denial coping.

On the other hand, subsequent studies using exploratory factor analysis with the Brief COPE have used Carver's (1997) subscales rather than the individual items. The rationale given for this is that the type of data assumed to be used for factor analysis fits better with the use of subscales rather than individual items, and secondly that using subscales is the more appropriate method when the sample size is small.

Using this method, the factors derived by Benson (2010) were engagement, distraction, disengagement and cognitive reframing. These factors appear to map more readily onto the theoretical framework of integrative models of coping. Integrative models posit that coping styles exist along two dimensions; firstly behavioural/problem-focused versus cognitive/emotion-focused coping, and secondly, approach versus avoidance coping. Benson's (2010) factors correspond as follows:

- engagement: behavioural/approach
- distraction: cognitive/avoidance
- disengagement: behavioural/avoidance
- cognitive reframing: cognitive/approach

The analysis of these factors suggested that they explained 61.2% of the variance and the Cronbach's alpha reliabilities ranged from .73 to .86, suggesting that the factors are robust. All subscale loadings were positive and above 0.40 for the factor they applied to.

The two studies had similar sample sizes (Hastings et al.: n=135; Benson: n=113). However, the reliability coefficients and the proportion of variance accounted for by the factors in the study by Benson (2010) appeared to account better for the data than those of Hastings et al. (2005) (reliability coefficients .68-.82; variance accounted for by the factors 49%). The structure of the Benson model was also similar to the categorisations of the subscales of the original COPE measure as outlined by Carver, Scheier and Weintraub (1989a).

For these reasons, the study by Benson (2010) was chosen as a guide for the present analysis, such that subscales for engagement and cognitive reframing were considered measures of approach coping and subscales for distraction and disengagement were considered measures of avoidance coping. This is summarised in Table P1 below.

Table P1- Brief COPE subscale categorisation in the present study following the model of Benson (2010)

Present study classification: Approach/Avoidance	**Benson (2010) classification: Category (mode)**	**Subscale**
Approach	Engagement (behavioural)	use of instrumental support
		active coping
		planning
		use of emotional support
	Cognitive restructuring (cognitive)	acceptance
		religion
		positive reframing
Avoidance	Disengagement (behavioural)	substance use
		behavioural disengagement
		denial
	Distraction (cognitive)	self-distraction
		humour
		self-blame
		venting

This method of categorisation in similar to that used by Lord and Robertson (2005) in their infertility study using the Brief COPE. The exceptions were that these researchers used the terms 'adaptive,' corresponding to the approach styles above, and 'maladaptive' coping, corresponding to the avoidance styles and the subscale 'humour' was classed as adaptive whereas in the Benson (2010) study, it was part of the avoidance group.

References

Benson, P. R. (2010). Coping, distress, and well-being in mothers of children with autism. *Research in Autism Spectrum Disorders, 4*(2), 217-228. doi:10.1016/j.rasd.2009.09.008

Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies - a theoretically based approach. *Journal of Personality and Social Psychology, 56*(2), 267-283. doi:10.1037/0022-3514.56.2.267

Carver, C. (1997). You want to measure coping but your protocol's too long: Consider the brief COPE. *International Journal of Behavioral Medicine, 4*(1), 92-100. doi:10.1207/s15327558ijbm0401_6

Hastings, R., Kovshoff, H., Brown, T., Ward, N., Degli Espinosa, F., & Remington, B. (2005). Coping strategies in mothers and fathers of preschool and school-age children with autism. *Autism, 9*(4), 377-391. doi:10.1177/1362361305056078

Lord, S., & Robertson, N. (2005). The role of patient appraisal and coping in predicting distress in IVF. *Journal of Reproductive and Infant Psychology, 23*(4), 319-332. doi:10.1080/02646830500273566