

Appraisal theory and emotional sequelae of first visit to colposcopy following an abnormal cervical
screening result

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Abstract

Objective: Attendance at colposcopy following an abnormal smear is potentially a highly distressing event. This study evaluates the role of cognitive appraisal components (Lazarus, 1991; Smith et. al., 1993) in explaining emotional reactions to this event. We also compare the psychological sequelae of immediate treatment at first colposcopy (See and Treat, ST) versus colposcopy with treatment deferred to a later date (Diagnose and Defer, DD).

Methods: 1085 women referred to colposcopy completed a questionnaire assessing appraisal and emotion following their attendance. Clinical data were abstracted from medical records and social deprivation scores were estimated from postal code information based on normative data.

Results: Diagnosis and cognitive appraisals were each significantly associated with emotion, together accounting for between 3 and 15% of variance in different emotions. Specific patterns of appraisal explained specific emotions in line with theoretical predictions. Women with CIN 2 or CIN 3 undergoing 'ST' were less anxious, less embarrassed and significantly more relieved compared with a matched sample of women undergoing 'DT' and perceived their first appointment as more motivationally congruent.

Conclusions: Diagnosis, motivationally incongruent experiences and low emotion-focused coping potential are the most important determinants of anxiety after colposcopy. 'See and Treat' appears to have a positive psychological impact by increasing motivational congruence.

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Cervical cancer is a major threat to women's health throughout the world. The UK has a high rate of incidence and mortality from cervical cancer for a developed country, with a rate second only to Denmark within the European Union (Patnick, 2000). A nationally coordinated screening programme offers screening to all women aged 20-64 (20-60 in Scotland) years of age. One important priority for research and practice in cervical screening was to ensure adequate rates of population coverage (e.g. Orbell & Sheeran, 1993 for a review; Hennig & Knowles, 1990; Hill, Gardner & Rassaby, 1985; Orbell, Crombie, Robertson et al., 1995; Sheeran & Orbell, 2000). Uptake in the UK has been rising since 1988 and has now reached 85.3%. There is also emergent evidence of effectiveness. Incidence of cervical cancer has fallen from 16 per 100,000 in 1986 to 9.3 per 100,000 in 1997 and mortality is currently falling by 7% a year (Office of National Statistics, 1998).

The present research concerns a further aspect of the cervical screening programme; the emotional impact of an abnormal smear test result and its management. In England, approximately 3.6 million women are screened each year, of whom about 16 % will be referred to a colposcopy clinic (Department of Health, 2001). Women receiving abnormal results are referred to colposcopy for an 'in situ' examination of the cells on their cervix by a colposcopist. The colposcopist then determines whether a biopsy is necessary and whether or not the woman requires further treatment and observation. Thus, following her first visit to the colposcopy clinic a woman may either be discharged directly back to her GP to rejoin the screening cycle, or may be seen again at the colposcopy clinic for further treatment and observation. A number of previous studies, utilising relatively small samples, have examined emotional reactions at different stages of the screening process (Table 1). Taken together, these studies suggest that women receiving abnormal cervical smear results experience elevated state anxiety (Spielberger, Gorsuch & Lushene, 1970), in comparison both to the adult female

norm score of 35 (Marteau, Kidd & Cuddleford, 1996) and to those receiving a normal result (Wardle, Pernet & Stephens, 1995). In particular, evidence suggests that anxiety is substantially elevated immediately prior to attendance at colposcopy (Marteau, Walker, Giles & Small, 1990; Marteau, Kidd & Cuddleford, 1996; Richardson, Doherty, Wolfe et al., 1996; Wardle, Pernet & Stephens, 1995; Wilkinson, Jones & Mc Bride, 1990). Interestingly, two studies suggest that state anxiety is reduced immediately after colposcopy (Richardson et al., 1996; Wilkinson et al., 1990) but may be substantially elevated again prior to the next appointment for treatment. Whilst each of these studies is limited by its sample size, taken together, evidence suggests that women experience anxiety firstly in relation to the meaning of an abnormal result and secondly, in relation to a hospital colposcopy appointment.

The present research seeks to further extend understanding of the nature and determinants of women's emotional reactions to their management following an abnormal cervical screening result. It is evident that hospital colposcopy appointments represent a considerable source of anxiety for women. Once having received an abnormal result a woman may be required to attend such an appointment on several occasions, either for continued observation or treatment. Women with high-risk abnormalities remain at risk of recurrent CIN and should be followed-up after treatment (e.g. Bornstein et al., 1999). However, many women do not attend all of their colposcopy appointments, with different clinics across the UK reporting DNA ('did not attend') rates ranging from 5-20% (National Audit Office, 1998). Given this observation, it is important to understand what factors might contribute to levels of distress experienced in order to inform practitioners as to how the colposcopy experience might be made more acceptable to women. We examine these issues amongst a large sample of women attending colposcopy over a one year period.

Emotional Reactions to Colposcopy

To date most studies concerning psychological impacts of the screening programme have focused on anxiety. However, there is qualitative and quantitative evidence to suggest that women may also experience a range of other emotional reactions, including anger, guilt, sadness and embarrassment (Campion, Brown, McCance et al., 1988; Gath, Hallam, Mynors-Wallis et al., 1995; Palmer, Tucker,

Waven & Adams, 1993). These emotional reactions are explicable, both in terms of the intrusive nature of gynaecological investigations and treatment and in relation to the possible implications of abnormal results. For example, an abnormal result may have perceived implications for future fertility and may be perceived to be the result of a sexually transmitted infection by the HPV virus. Feelings of embarrassment have also been implicated in non-uptake of screening (Kowalski & Brown, 1994; Orbell, Crombie, Robertson et al., 1995; Orbell, Crombie & Johnston, 1996) and reduced intention to undergo repeat screening (Orbell, 1996). In the present study, we utilized measures of all of these emotional states. We also included a measure of positive emotion, feelings of relief, since it is important to consider those aspects of procedure that might contribute to greater patient wellbeing as well as those aspects that contribute to distress.

The Role of Cognitive Appraisals in Explaining Emotion

An important aim of the current study was to provide understanding of those aspects of the colposcopy encounter that arouse emotion. One important class of theories of emotion, known as appraisal theories, (e.g. Frijda, 1986; Lazarus, 1991; Lazarus & Folkman, 1987; Lazarus & Smith, 1988; Roseman, 1991; Smith & Ellsworth, 1985) suggest that emotion is closely linked to cognitive appraisals of an encounter. According to this approach, emotional reactions are not a simple function of either a person's dispositions or her situation. Instead, they are evoked as the result of a meaning analysis in which the properties of both the self and the situation are systematically appraised to determine the adaptational implications of the situation for the person's wellbeing. Different emotions are hypothesised to be particular responses to specific person-situation relationships having distinctive implications for wellbeing.

The present study focuses on the appraisal components specified by Smith and Lazarus in their account of emotional experience (Lazarus 1991, Smith and Lazarus, 1993). The model proposes a number of components of appraisal, each representing a specific judgement made by a person to evaluate the adaptational significance of a situation for the person's wellbeing. Each appraisal component addresses one of the two general appraisal issues originally proposed by Lazarus and

colleagues as relevant to well-being under stress (Lazarus, 1966; Lazarus & Folkman, 1984). Primary appraisal concerns whether and how the situation is relevant to the person's wellbeing and secondary appraisal concerns the person's resources and options for coping with the situation.

The model utilises six appraisal components, two primary appraisals and four secondary appraisals. Primary appraisal comprises motivational relevance and motivational congruence/incongruence. Motivational relevance refers to the extent to which any given encounter has relevance for a person's own goals and motives (issues the person cares about). Without motivational relevance, an encounter will have no ability to arouse emotion. Motivational congruence governs the valence of emotion generated. If an encounter is both relevant to and congruent with an individual's own goals and motives in the situation, she will experience positive emotion. Conversely, an encounter that is incongruent with relevant goals and motives will have potential to generate negative emotion.

Whereas primary appraisal governs the intensity and valence of emotional experience, secondary appraisals concern the options and prospects for coping and define the specific type of emotion experienced. The four secondary appraisal components are accountability, problem-focused coping potential, emotion-focused coping potential and future expectation. Accountability involves the attribution of blame for the emotionally salient event and may be directed to the self or to another person. Whether accountability is directed to the self or another person will determine who or what should be the focus of any subsequent coping efforts. Coping potential relates to whether and how an individual perceives she can influence the situation for the better and reduce discrepancies between the current situation and one's own motivations. Problem-focused coping potential appraises the possibility of acting directly upon the situation to bring or keep it in line with personal motivations. Emotion-focused coping potential appraises the prospects for adjusting psychologically to the encounter. and future expectation concerns a person's appraisal of the possibility that there may be a change in the actual or psychological situation, for whatever reason, that could make the situation seem more or less motivationally congruent.

The appraisal model with which we are concerned here provides specific theoretical predictions as to which appraisal components are necessary and sufficient for the experience of discrete emotions (Lazarus, 1991; Smith, Haynes, Lazarus & Pope, 1993; Smith & Lazarus, 1993). Five of the emotions we examine here are negative and are thus hypothesized to be characterized by motivational relevance and motivational incongruence. Relief, the sixth emotion we included is a positive emotion and is hypothesized to be associated with motivational relevance and motivational congruence. Further to these specifications, we anticipate that secondary appraisals will show distinct associations with different negative emotions. Anger and guilt are defined by combining motivational relevance and motivational incongruence with the secondary appraisal of accountability. Anger is defined by other-accountability, corresponding to other-blame, whereas guilt is characterized by self-accountability, corresponding to self-blame. Anxiety is characterized by uncertainty and corresponds to the perception that one will not be able to adjust psychologically to a harm should it occur. We therefore hypothesize that anxiety will be defined by combining appraisals of motivational relevance and motivational incongruence with the appraisal of low emotion-focused coping potential. Sadness is characterized by a perceived inability to restore loss and is hypothesized to be associated with the combination of motivational relevance and motivational incongruence with appraisals of low problem-focused coping potential and negative future expectations.

In the present study we also examine two emotions that have not been the focus of previous empirical work by Lazarus or Smith. Relief is proposed by Lazarus (1991, p.280-281) to be a 'bona fide' emotion and one which uniquely depends upon a change in a person-environment relationship, rather than upon a single relational situation. For relief to occur, there must have been a motivationally incongruent situation which has been eliminated. Relief is hypothesized to be associated with motivational relevance and motivational congruence, no secondary appraisals are necessary for the experience of relief. Embarrassment is not addressed by Smith and Lazarus. However, a number of theorists propose that embarrassment is a distinct emotion (e.g. Keltner & Buswell, 1997; Parrott & Smith, 1991; Tangney, 1996) and have examined experiential accounts of this emotion which provide

some basis for hypothesizing the relational circumstances necessary for embarrassment to occur.

Remembered instances of embarrassment are characterised as unexpected, sudden events over which the person had little control. The emotional display associated with embarrassment is also uncontrolled (Tangney, 1999). Based on this analysis we propose that embarrassment is likely to be associated with both low problem-focused coping potential, reflecting lack of situational control and low emotion-focused coping potential, reflecting an ongoing embarrassing experience whilst undergoing colposcopy. Accountability would not, we suggest, normally be an important component of embarrassment, because it is typically caused by an unexpected event. However, it seems plausible that women at colposcopy might attribute blame to clinic staff so we also investigate accountability in this situation. In sum, we hypothesized that embarrassment would be associated with motivational relevance and motivational incongruence combined with low problem-focused coping potential, low emotion-focused coping potential and other accountability.

In recent years, appraisal theory has been the subject of considerable research attention and there is debate as to the precise patterns of appraisals in distinct emotions. One limitation of much of this research is its reliance upon remembered instances of specific emotions or on the use of vignettes describing imagined events (see Parkinson, 1995, 1997 for a critique). With a few exceptions, (e.g. Smith & Ellsworth's (1987) study of appraisal during an examination period) there is little research that explicitly examines people's appraisals and emotions in relation to the same, naturally occurring encounter. The present research sought to address this limitation, by examining appraisals of the colposcopy encounter, which may be regarded as having the potential to generate significant emotion. In the present study, we included individual assessments of motivational relevance, motivational congruence, accountability, coping potential and future expectations. We anticipate that these measures, which reflect individual perceptions of the adaptational significance of colposcopy, will explain differences in emotion experienced by women in relation to a naturalistic event likely to evoke strong emotional responses.

Management type

The final aim of the present study was to provide a matched comparison of appraisal and emotion in relation to two distinct management strategies used at first colposcopy. An important current debate in the management of women following abnormal smear results concerns the acceptability of offering a woman treatment at her very first colposcopy appointment. In this instance, known as 'See and Treat' (ST), the colposcopist will decide, on the basis of colposcopic impression alone, to treat the cervix during this first consultation. This approach may be contrasted with the practice, known as 'Diagnose and Defer Treatment' (DD) in which the colposcopist will take a biopsy if indicated and send the woman an appointment for treatment some weeks later, after laboratory results have been received.

Considerable debate exists in the clinical literature regarding the advantages and disadvantages of these two management options. ST is appealing for a number of reasons. Since only one clinic visit is required for evaluation and treatment, this may represent a time and cost saving to both patients and clinics (Holschneider, Ghosh & Montz, 1999). There may also be a reduced risk of loss to follow-up before treatment of Cervical Intraepithelial Neoplasia (CIN) has taken place. Caution has been advocated because of the potential risk of 'over treating' women whose biopsies would ultimately not indicate treatment, and of the need or otherwise to inform women of this possibility before undertaking ST (Grant, 1998). An over treatment rate of 47% has been reported from one large study of over 600 women (Luesley, Cullimore, Redman et. al., 1990). However, other clinical evidence suggests that 'over treating' is not a significant risk (Fung, Cheung, Rogers & To, 1997; Das & Elias, 1998), provided that treatment is determined by colposcopic impression and not indiscriminately applied to all women referred to colposcopy (Bornstein, Yaakov, Pascal, Faktor, Baram, Zarfati & Abramovici, 1999). Whilst it has been claimed that ST has not only clinical and economic advantages, but also results in high patient satisfaction (Holschneider, Ghosh & Montz, 1999), we have not been able to locate any studies which have sought to empirically examine psychological sequelae of ST versus DD. In sum, whilst ST has been subject to clinical and economic evaluation, an empirical study of psychological sequelae of ST is overdue. By comparing appraisal and emotion in matched samples of

women experiencing these different situations, we aim to provide insight into how management type might alter the emotional significance of the colposcopy visit and provide an empirical test of the claim that ST increases patient satisfaction.

Summary of Study Hypotheses

In sum we sought to extend understanding of women's' experience of colposcopy amongst a larger sample than hitherto examined and with respect to a range of negative and positive emotions. We sought to test the role of cognitive appraisal components in explaining women's' emotional reactions. Specifically, we extend existing tests of appraisal components theorized to explain and distinguish 6 different emotions. We hypothesize that motivational relevance and motivational incongruence will characterize anxiety, sadness, guilt, anger and embarrassment, whilst motivational relevance and motivational congruence will be associated with relief. We further hypothesize that anxiety will be associated with low emotion-focused coping potential, sadness with low problem-focused coping potential and low expectation, whilst guilt will be defined by high self-accountability and anger by high other-accountability. We also test the hypothesis that embarrassment will be associated with low problem-focused coping potential, low emotion-focused coping potential and other-accountability. Our supplementary aim was to compare appraisals and emotion amongst matched samples of women whose first colposcopy visit involved only diagnosis with treatment deferred to a later date, or immediate treatment during that consultation. We hypothesize, based on anecdotal evidence to date, that ST will be more positively appraised by women.

Method

Participants

Women were recruited to the study as part of a larger study of colposcopy based in two colposcopy clinics in the north of England. Women were eligible for inclusion in the study if they were attending their first appointment at a colposcopy clinic, having been referred with an abnormal cervical smear result.

Procedure

Women attending their first colposcopy appointment were informed of the study during their first colposcopy appointment. Contact information was extracted from medical records by a research officer with an NHS contract. Women were initially sent a letter explaining the purpose of the study together with a short questionnaire to their home address within 7 days of their first attendance. A pre-paid reply envelope was enclosed with the questionnaire. If no reply was received within 14 days, the woman was contacted by telephone by the research officer and a second copy of the letter and questionnaire was posted to her if required. If no completed questionnaire was returned after this reminder, the woman was assumed not to have consented to participate and was not contacted again. The protocol was approved by the local medical ethics committee.

Materials

The short, 4-page questionnaire booklet assessed cognitive appraisals and emotional state after colposcopy. We assessed six different emotional states. Anxiety was assessed by the Spielberger state anxiety inventory (Spielberger et al., 1970). This inventory provides 20 negatively and positively framed items (e.g. ‘I feel tense’, ‘I feel frightened’, ‘I feel relaxed’). Items are scored on a four-point response scale (not at all, somewhat, moderately so, very much so) and summed to give a total scale score between 20 and 80 with higher scores indicating high anxiety. Population norms are available for this scale and it has also been previously utilised to assess anxiety in women with abnormal cervical smear results (e.g. Marteau et al., 1990, 1996; Wardle et al., 1995; Wilkinson et al., 1990). Items to assess other emotions were derived from Smith, Haynes, Lazarus & Pope (1993). These items have face validity and have been successfully used as manipulation checks in experimental studies where determinants of emotion are manipulated. All items were scored on four point scales (not at all – very much so). Three items assessed guilt (‘I feel sorry’, ‘I feel guilty’, ‘I feel regretful’). Five items assessed anger (‘I feel angry’, ‘I feel enraged’, ‘I feel irate’, ‘I feel mad at the world’, ‘I feel furious’). Sadness was assessed by three items (‘I feel sad’, ‘I feel sorrowful’, ‘I feel downhearted’). Embarrassment was also assessed by three items (‘I feel embarrassed’, ‘I feel humiliated’, ‘I feel disgraced’). A single item (‘I feel relieved’) measured relief.

Appraisals were measured using items provided by Smith et al. (1993, personal communication) modified to suit the colposcopy clinic encounter. Each item was followed by a seven-point response scale. Motivational relevance was assessed by the item ‘How important/unimportant to you was your last visit to the colposcopy clinic?’ (extremely important – extremely unimportant). Motivational incongruence was assessed by the item; ‘Thinking about what you didn’t want to happen during your visit to the colposcopy clinic, to what extent did these undesirable things happen?’ (not at all – very much so). An open-ended question followed this item, in which participants were asked to write down what, if any, these undesirable things were. Motivational congruence was assessed by the item; ‘Thinking about what you did want to happen during your visit to the colposcopy clinic, to what extent did these desirable things happen?’ (not at all – very much so). This was followed by an open-ended item in which participants were asked to write down what, if any, these desirable things were. Emotion-focused coping potential was assessed by the item ‘During your visit to the colposcopy clinic, how certain were you that you would be able to deal emotionally with what was happening, however it turned out?’ (extremely sure I would be able – extremely unsure I would be able). Problem-focused coping potential was assessed by the item; ‘During your visit to the colposcopy clinic, how certain were you that you would be able to make things go the way you wanted them to during your visit?’ (extremely sure I would be able – extremely unsure I would be able). Self-accountability was assessed by the item; ‘To what extent did you consider yourself responsible for what happened during your visit to the colposcopy clinic?’ (not at all – very much so). Other accountability was assessed by the item; ‘To what extent did you consider someone else responsible for what happened during your visit to the colposcopy clinic?’ (not at all – very much so). Expectation was assessed by the item; ‘Think about how you wanted your visit to the colposcopy clinic to be. When you were there, to what extent did you expect things to go (for any reason) the way you wanted? (not at all – very much so).

Clinical Data

Data concerning diagnosis derived from the colposcopic impression, name, address, date of birth, colposcopist seen at first visit, treatment received on first visit and subsequent attendance/non-attendance at follow-up appointments was abstracted from medical records.

Socio-economic Status

Social deprivation index scores based on calculations by Carstairs & Morris, (1989) were subsequently acquired from Mimas and merged into the data set using postal code information.

Results

A total of 1752 women eligible for inclusion in the study were sent a questionnaire within 7 days of their first colposcopy attendance. The response rate was 62%. Response was associated with age and deprivation category. Non-responders were slightly younger than responders (means = 34.20 & 35.40, respectively, $t(1750) = 2.22$, $p < 0.05$) and had higher deprivation indexes (Carstairs means = 2.97 & 2.49, respectively, $t(1750) = 2.60$, $p < 0.01$). Response was not associated with diagnostic outcome (Chi-square (3) = 2.17, ns). Of the 1085 women who returned a completed questionnaire, 273 (25%) did so following a reminder. The average interval between the date of first colposcopy visit and the date on which a questionnaire was returned was 19.22 days (st. dev. = 27.56). All questionnaire data reported here was collected prior to a woman attending a second colposcopy appointment, the median interval between a first and second appointment during this study being 183 days.

The final sample of 1085 women for whom questionnaires were available ranged in age from 18 to 74 years (mean = 2.49, st.dev. = 3.701). Fifty percent of the sample were aged less than 33 years. Carstairs indexes ranged from -3.99 to 9.77 (mean = 2.49, st.dev. = 3.70), where higher positive scores indicate higher deprivation. Inspection of medical records of diagnosis made from the colposcopic impression showed that 453 women (41.8%) were diagnosed with CIN 2 or 3, 175 (16.1%) CIN1, 332 (30.6%) no, or minor abnormalities and 125 (11.5%) women were diagnosed with another condition such as HPV, candida or inflammation of the cervix.

Emotion after Colposcopy

A principal axis factor analysis confirmed the factor structure of items assessing different emotions (see Appendix 1). Reliabilities for measures of emotion were satisfactory; Cronbach's alphas were .94 (state anxiety), .73 (guilt), .85 (anger), .88 (sadness) and .83 (embarrassment). Table 1 summarises mean state anxiety scores obtained here and in previous studies. Mean state anxiety for the total sample was 40.91 (st.dev. = 13.48). Just over sixty percent of the sample reported anxiety above 35, the norm for adult women. The mean obtained here, was, as expected, lower than that obtained in previous studies (e.g. Marteau et.al., 1990, 1996; Richardson et.al., 1996; Wilkinson et.al., 1990) where anxiety was assessed after receipt of abnormal results but before attending colposcopy.

For the purposes of comparison with other emotions assessed here we also computed the mean state anxiety score (by dividing the total score by the number of items), giving a range from 1 to 4. Mean anxiety was 2.04 (st.dev. = .68) and 95% of women had a score above 1, indicating at least a little anxiety. In comparison, 35% reported feelings of guilt (whole sample mean = 1.29, st.dev. = .54), 42% reported anger (whole sample mean = 1.28, st.dev. = .53), 28% reported embarrassment (whole sample mean = 1.25, st.dev. = .57) and 45% reported sadness (whole sample mean = 1.50, st.dev. = .73). Seventy-one percent of the sample reported feeling at least a little relieved (whole sample mean = 2.34, st.dev. = 1.09).

Examination of the relationship of emotion to socio-demographic variables revealed just two significant relationships. Higher social deprivation assessed by means of the Carstairs index was positively associated with state anxiety ($r = .06$, $p < 0.05$). A small negative association obtained between age and embarrassment indicating that older women were less likely to report that they felt embarrassed ($r = -.063$, $p < 0.05$).

Relationship of Diagnosis to Emotion

During their consultation with the colposcopist, women may be expected to receive verbal information regarding their diagnosis and future treatment requirements. Small sample sizes in previous research have precluded examination of emotional reactions according to diagnosis. Mean state anxiety scores according to diagnosis determined from the colposcopic impression are shown in

Table 2. ANOVA showed that state anxiety differed significantly according to diagnosis ($F(3,1081) = 6.46, p < 0.001$). Post hoc Tukey tests showed that women receiving a diagnosis of CIN 2 or 3 were significantly more anxious after colposcopy than those receiving a diagnosis of no or minor abnormalities (mean difference = 4.23, $p < 0.01$). An identical pattern of findings was obtained in relation to sadness. Women with CIN 2 or 3 were significantly more likely to report feelings of sadness ($F(3, 1081) = 4.23, p < 0.01$, Tukey mean difference = .17, $p < 0.01$) than those receiving a diagnosis of no or minor abnormalities. None of the other negative emotions; anger, guilt or embarrassment were significantly associated with diagnosis. ANOVA showed that feelings of relief were associated with diagnosis ($F(3, 1081) = 3.82, p < 0.05$). Examination of pairwise differences showed that women least likely to report feeling relieved were those with a diagnosis of CIN1 (mean = 2.17, st.dev. = 1.10) and this group of women differed significantly from those receiving a diagnosis of no or minor abnormalities (mean = 2.49, st.dev. = 1.12, Tukey mean difference = .32, $p < 0.05$).

Relationship of Appraisal to Emotion

Inspection of responses to the appraisal of motivational relevance showed that virtually all women considered their visit to the colposcopy clinic to be important to them (92% scoring above the midpoint, mean = 6.24, st.dev. = 1.40). This finding confirms that the encounter can be regarded as one capable of arousing emotion. Nineteen percent of women regarded what had happened at the clinic as motivationally incongruent (mean = 3.0, st.dev. = 1.77) whilst 57% percent regarded the encounter as congruent with their motives in the situation (mean = 4.86, st.dev. = 1.72). These findings are consistent with reports of both positive and negative emotion generated by the encounter. With regard to secondary appraisals, the majority of women did not attribute blame for what happened at the clinic, with 24% reporting other-accountability (mean = 3.15, st.dev. = 1.98) and 29% reporting self-accountability (mean = 3.51, st.dev. = 1.93). Mean scores on coping potential were just above the midpoint on the scales. Nearly thirty percent of women felt unsure that they could deal emotionally with what was happening at the clinic (mean = 4.52, st.dev. = 1.64) and 28% felt unsure that they could make things go the way they wanted whilst at the clinic (mean = 4.15, st.dev. = 1.54). There were also

considerable individual differences in expectation (mean = 4.45, st.dev. = 1.44), where 19% of women reported that they did not expect things to go the way they wanted whilst at the clinic.

Multivariate Analyses. Correlations between the 8 cognitive appraisals ranged from $r = .01$ to $r = .32$, indicating that there were no difficulties arising from multicollinearity amongst these independent predictors of emotion. In order to test the theoretically predicted relationships between appraisal and emotion, we conducted a series of three-step multiple regression analyses. Sociodemographic variables and diagnosis were entered at the first step followed by the theoretically specified cognitive appraisal components at the second step. This procedure enables us to examine the unique contribution of appraisal to emotion after controlling for background variables and permits assessment of the ability of appraisal to mediate the effects of background variables. In order to include diagnosis in the analyses, 3 dummy variables were created as specified by Tabachnik and Fidell (1989): (CIN 2 or 3 = 1, all other diagnoses = 0; CIN1 = 1, all other diagnoses = 0; other abnormality = 1, all other diagnoses = 0; cf. Table 2) . At the third step of the regressions we entered all the non-dependent emotion variables. This last step enables us to examine the ability of appraisal components to distinguish discrete emotions. The results of these regression analyses are summarised in Table 3.

Background variables made a significant contribution to the regression of anxiety, sadness and relief accounting for 2%, 1% and 1% of variance in each emotion respectively. All other regression models were non-significant after this first step. Anxiety and sadness were each positively associated with diagnosis of CIN2/3 (anxiety, $\beta = .14$, $p < 0.05$; sadness, $\beta = .12$, $p < 0.01$), indicating that women receiving diagnoses of CIN2 or 3 were significantly more anxious and more sad following colposcopy than those receiving other diagnoses. Relief was inversely associated both with a diagnosis of CIN2/3 and with a diagnosis of CIN1, indicating that not receiving either of these diagnoses was a positive source of relief. These findings are consistent with those obtained in the univariate analyses.

The addition of cognitive appraisals to the regression equations made a significant contribution to the prediction of each of the emotions. As shown in the last row of Table 3, F-change values were significant in each case. Appraisals accounted for an increment of between 3% and 15% of explained

variance in emotion. Notably, the addition of appraisals to the regression models did not reduce the beta values of diagnosis to non-significance, indicating that the effect of diagnosis cannot be explained by appraisal. Appraisals made unique independent contributions to the prediction of anxiety, sadness and relief over and above diagnosis.

The pattern of appraisals associated with each emotion shows consistency with theoretical predictions. Motivational relevance or the appraisal that an event has personal relevance to one's goals and motives is a pre-requisite for emotion. Ratings of motivational relevance did not achieve significant beta values in 5 of the regression models. However, since we have already established that the majority of women rated their appointment as highly relevant, this finding is probably attributable to lack of variance in responses arising from the investigation of a single encounter. The primary appraisals of motivational congruence and motivational incongruence are proposed to determine the valence of emotion experienced. Consistent with this prediction, motivational congruence was significantly and positively associated with relief ($\beta = .15, p < 0.01$) and distinguished this emotion from the 5 negative emotions. Motivational incongruence was significantly positively associated with all of the negative emotions, as expected.

Secondary appraisals of accountability, coping potential and future expectation were expected to distinguish the precise nature of emotion experienced. Consistent with hypotheses, anxiety was associated significantly with low emotion-focused coping potential ($\beta = -.32, p < 0.01$) and sadness with low problem-focused coping potential ($\beta = -.12, p < 0.01$). The beta value for expectation did not however, reach significance in the regression of sadness. As hypothesized, guilt was associated with self-accountability ($\beta = .13, p < 0.01$) and anger with other-accountability ($\beta = .07, p < 0.01$). Our analysis of the hypothesized determinants of embarrassment met with partial success; low problem-focused coping potential ($\beta = -.07, p < 0.05$) and low emotion-focused coping potential ($\beta = -.09, p < 0.01$) were each associated with embarrassment, whilst a non-significant beta was obtained for other-accountability.

The third step of the regression analysis illustrates the inter-relatedness of the emotions and more importantly, affords a stringent test of the ability of the appraisal components to distinguish discrete emotions. After this step, the ability of the theoretically specified appraisal components to predict emotion remained unchanged for anxiety and relief and was partially retained for guilt, where self-accountability remained significant ($\beta = .12$, $p < 0.01$) but motivational incongruence was reduced to non-significance. The regression of sadness showed that after controlling for all other emotions, neither problem focused coping potential nor expectation accounted for significant variance in sadness. Similarly, neither motivational incongruence nor other-accountability was able to account for anger after controlling other emotions. Interestingly, motivational incongruence remained a significant predictor of embarrassment after this step ($\beta = .07$, $p < 0.01$), but problem-focused coping potential and emotion-focused coping potential were reduced to non-significance.

Given the importance of motivational incongruence in understanding negative emotional reactions to the colposcopy visit, it is important to gain insight into what women perceived as incongruent. A total of 408 women (38%) provided responses to the open-ended item in which they were asked to specify the nature of undesirable events experienced. This percentage is consistent with the percentage rating their experience of incongruence as 4 or above on the 7 point scale (42%). These responses were coded by two independent raters ($Kappa = 0.98$). The most common responses were pain or discomfort during the examination (10% of all women), discovering something was wrong (5%), feeling humiliated whilst at the clinic (4%), a lengthy wait at the clinic (4%), discovering it would be necessary to return to the clinic again (2%), students or too many people present in the examining room (2%) and 'offhand' treatment by staff (2%). It is worth noting that comments relating to interpersonal aspects of the encounter such as offhand staff treatment and humiliation did not relate solely to the colposcopy examination itself and the use of stirrups, but to the clinic culture and organisation. For example, one woman noted 'I was rushed in and out. I had to virtually force someone to tell me what was going on' and another commented that she 'had to wait in the corridor with a gown on and no underwear'. Several women commented that doctors and students had conversations

amongst themselves in their hearing or that student training meant that the procedure took a very long time.

Comparison of See & Treat with Diagnose & Defer

The supplementary aim of the present study was to compare the psychological impact of a ST management strategy with a DD management strategy. There were no differences between ST versus DD in terms of response rate. A total of 211 ST patients were available, of who 136 returned a questionnaire (64.5%). A total of 1541 DD patients were available, of whom 949 returned a questionnaire (61.6%) (Chi-square (1) = .65, ns).

In order to compare these two groups we first drew a sample of DD participants matched to the ST cases in terms of severity of abnormalities, age and deprivation category. Since these variables were related to emotion in the previous analyses, controlling for these variables was important in order to compare the impact of management type, per se. Matching proceeded as follows. All ST women were classified as high risk, (CIN 2 or 3) according to the colposcopic impression. We therefore first drew a sample of all high risk (N = 320) women treated by DD. We then drew, for each ST case, the first available aged matched DD case with a Carstairs score within +/- 1.0. T- tests confirmed the success of our matching procedure. There were no differences between our matched samples in terms of age (means = 32.43, S and T versus 32.48, DD, $t(270) = -.046$, ns). Carstairs indexes were also equivalent for the ST and DD groups (means = 2.52 & 2.55, respectively, $t(270) = -.06$, ns). We conducted one further preliminary check on our data. Since ST and DD patients were unequally distributed across colposcopists, we undertook a preliminary comparison of high-risk women treated by DD to ensure that there were no differences in appraisal or emotion according to colposcopist. MANOVA confirmed that there was no significant main effect of colposcopist ($F(2, 278) = 1.24$, ns).

Emotion and Appraisal. Table 4 summarises mean responses to our emotion and appraisal measures according to management type. As hypothesized, women undergoing ST reported significantly lower anxiety (mean = 41.08) days after their first colposcopy than those undergoing DD (mean = 43.98). Women who underwent ST were also less embarrassed than women who underwent DD. (means =

1.18 versus 1.28, respectively) and reported feeling significantly more relieved (means = 2.68 versus 2.11). Significant differences between the two groups also emerged for motivational congruence and problem-focused coping potential. Women undergoing ST found their first colposcopy appointment more motivationally congruent, that is, they were more likely to rate what had happened at the clinic as congruent with what they had desired would happen (means = 4.99 & 4.62, respectively). ST participants also perceived that they had higher problem focused coping potential, that is they were more likely to perceive that they were able to make things go the way they wanted during their visit (means = 4.47 & 4.06, respectively).

Qualitative data. Given the difference in motivational congruence obtained between the two groups, it is instructive to examine responses to the open-ended item concerning the nature of desirable happenings. A total of 79 (58%) ST and 64 (47%) DD participants provided qualitative responses to this question. Content analysis by two independent coders (Kappa = .98) identified 3 categories of positive comment, shown in Table 5. Women undergoing both procedures were most likely to make positive comments regarding the quality of procedural explanation offered by clinic staff and the sympathetic way in which they were treated whilst at the clinic. Six women particularly commented upon the use of monitors in the clinic, which enabled them to observe their cervix. Women undergoing ST also made positive comments about the advantages of receiving treatment during their first visit. Perceived advantages of early treatment included a) the perception that they had been treated without delay (i.e. no waiting list), b) the psychological benefits of getting the treatment procedure ‘over and done with’ and not having to endure anxiety whilst anticipating this and c) the perception that because everything was done at the one visit, they would not have to take the time and trouble to return to the clinic again. Women undergoing DD were more likely to comment upon the desirability of clear diagnostic information.

Whilst we did not obtain a significant difference in ratings of motivational incongruence between the two groups, it is important to note that content analysis of the undesirable happenings listed by women revealed just one comment from a ST patient about the unexpectedness of being

treated immediately; “ thought I was having just a colp, not any treatment”, although several women in both groups noted that it was undesirable to be confirmed as having CIN 2 or 3 and needing to be treated. Thus, virtually all comments made regarding the ST management strategy were favourable.

Discussion

The present study confirms that the colposcopy experience is an encounter capable of arousing emotion. Prior to colposcopy, women know only that they have an abnormal cervical smear result. During the consultation, they may receive further information from the colposcopist regarding the severity of their abnormality. The large sample size utilized here enabled evaluation of the relationship between CIN severity and distress. We obtained what might be described as a dose response relationship, where, for women who were discharged back to general practice, anxiety after colposcopy was at a level approaching Spielberg et.al’s (1970) female adult norm. This group were significantly less anxious after colposcopy than those receiving a diagnosis of CIN2 or 3, who would require treatment and further visits to colposcopy. These findings underline the importance of the colposcopy consultation in providing diagnostic information, which acts to bring ongoing uncertainty to a close. Notably, in the regression models we found that diagnosis remained a significant predictor of emotion after taking account of cognitive appraisals, suggesting that diagnostic information and appraisal of the clinic encounter itself are independent determinants of emotional reactions. This should not, however, be taken to imply that cognitive appraisals of receiving a diagnosis might not mediate the impact of diagnosis on emotion.

Our primary goal was to provide a field test of the role of cognitive appraisals specified by Smith and Lazarus’ (1993) appraisal theory in relation to a naturally occurring, emotion arousing encounter and to extend empirical tests of the theory to relief and embarrassment. Cognitive appraisals made a significant contribution to each of our regression models and explained between 3 and 15% of variance in emotion. Consistent with theoretical predictions, motivational incongruence was a significant predictor of each negative emotion. Motivational congruence obtained a significant beta value in the prediction of the positive emotion, feelings of relief and distinguished this emotion from

the 5 negative emotions. These findings are consistent with the theoretical prediction that primary appraisals determine the valence of emotion experienced in an encounter. We also obtained strong support for Lazarus (1991) analysis of relief which has not been previously tested in an empirical context such as this. Relief is a cognitively simple emotional experience, which was adequately predicted here by motivational congruence and motivational relevance, even after controlling for other emotions. Future research might consider how this uniquely process related emotion might evolve across an encounter, or be distinguished from other positive emotional experiences.

The model of appraisal components examined here also performed well in explaining each of the specific emotions. Consistent with theory and with previous laboratory findings, ongoing anxiety was associated with low-emotion-focused coping potential, indicating that women experiencing this emotion after colposcopy had not been able to successfully control their sense of threat by use of cognitive emotion focused coping activity. Sadness was associated with low problem-focused coping potential, consistent with a perception of an uncontrollable loss or harm. Accountability also was able to successfully distinguish between anger, which was associated with other-blame and guilt which was associated with self-blame.

We sought to extend the appraisal analysis to the prediction of embarrassment in the present study. We obtained support for our hypothesis that embarrassing experiences are likely to be appraised as uncontrollable, implying that there is little a woman might do to avoid the source of embarrassment during colposcopy. Embarrassment was also associated with appraisals of low emotion-focused coping potential, implying an ongoing struggle to find ways of cognitively altering feelings of embarrassment. It should be noted however, that in the final step of our analysis, these appraisal components did not predict emotion after controlling all other emotions, suggesting that they could not distinguish embarrassment as a distinct emotion. However, at this final step, motivational incongruence continued to explain significant variance in embarrassment, suggesting perhaps that the intensity of this emotion was uniquely involved in the particular nature of motives or goals threatened by the colposcopy

experience. Further consideration might be given to examining different types of motivational incongruence.

Whilst the increments in variance explained accounted for by appraisals are consistent with previous research, it might be argued that the obtained increments of between 3 and 15% raise the question of sufficiency of the appraisal dimensions assessed here. Moreover, we have extended previous empirical work by providing a direct test of the sufficiency of the appraisal components in the last step of our regression analysis. This analysis showed that theoretically specified appraisals were able to account for unique variance in anxiety, relief and guilt, but not in anger, sadness or embarrassment, suggesting that the current appraisal dimensions are insufficient to explain discrete emotions. In previous laboratory based research utilizing vignette methodology, attempts are usually made to examine ‘pure’ instances of specific emotions, whereas the present study utilized a naturally occurring encounter where a number of different emotions may have been experienced concurrently. It is possible, therefore, that previous studies may have over-estimated the relation between specific appraisals and specific emotions. Alternatively, it may be that the currently available questionnaire measures for assessing appraisals and the modified versions used here are not ideal measures of appraisals. At a conceptual level, the six appraisals specified may not capture some of the uniquely interpersonal aspects of the situation studied here. Manstead and Tetlock (1989), for example have argued that the appraisal dimensions recovered by Smith and Ellsworth (1985) are inadequate to capture the social nature of emotions such as guilt or embarrassment and have proposed additional dimensions concerning the expectedness of events and the consistency of events with personal standards. Future research might consider the inclusion of these additional dimensions.

In practical terms, the present findings show that women’s anxiety in relation to colposcopy is explained largely by motivational incongruence and low emotion focused coping potential. The present analysis is not causal and further research might examine the utility of modifying aspects of the procedure to assess their ability to modify appraisal and emotion. Thus, improving women’s experience might focus upon addressing those aspects of the encounter identified in our qualitative analysis as

incongruent with their wishes, and on assisting them in the process of managing their emotional reactions to the procedure.

A supplementary aim of our study was to provide a hitherto lacking psychological evaluation by comparing appraisal and emotion in matched samples of women treated by different management types. Our results indicate that ST appears to have distinct psychological benefits for women. Women undergoing ST appraised their experience as more motivationally congruent and perceived higher problem focused coping potential. They were also less anxious, less embarrassed and more relieved in the days after their first colposcopy appointment.

Perhaps our most notable finding in regard to management type was that whilst it did not influence the extent to which women found their colposcopy experience to be motivationally incongruent, it did modify perceived motivational congruence, indicating that women undergoing ST felt that their clinic experience was more in line with their own goals and motives in the situation. Motivational congruence was significantly associated with feelings of relief after the appointment. Analysis of qualitative data revealed that immediate treatment was desirable to women for three different reasons. First, some women commented that they had been treated promptly, perhaps implying that they had not encountered a delay or a waiting list for treatment. Second, some women noted that they did not have to endure ongoing anxiety while waiting for treatment. Third, some women pointed to the advantages of getting the treatment over and done with at the one visit, so that they would not have to take the time and trouble to return again.

It is not entirely clear what might have contributed to the higher levels of problem focused coping potential perceived by women undergoing ST. Perceived problem focused coping potential was negatively associated with anxiety and embarrassment. Both of these emotions are anticipatory and arise from uncertainty (Lazarus, 1991). Although a woman with an abnormal result knows something may be wrong, it is not sufficiently concrete a threat for her to be able to perceive anything she can do to reduce it, save wait for her appointment. The colposcopy visit goes some way to terminating this uncertainty, both about the procedures to be encountered, whether treatment will be painful, and

importantly, about the meaning of the abnormal result. Women undergoing ST may have experienced greater closure on this uncertainty because they received diagnostic information that was not dependent upon a further wait for biopsy results and because they were not uncertain about what treatment they would have to undergo in the future. It is also possible that they felt involved in the decision to treat and consequently perceived a greater sense of control over doing something about the problem with their cervix.

It should be noted that the present findings relate only to management of women with CIN 2 and 3. Considerable debate exists as to the appropriate management of women with CIN1 or mild abnormalities (e.g. Meana, Stewart, Lickrish et al., 1999). For example, particular concerns have been raised about the difficulty of persistent mild abnormalities and the decision whether to treat or to observe such women. Whilst this management policy may risk over-treatment, observation may lead to ongoing uncertainty regarding the meaning of the abnormal smear leading women to experience ongoing anxiety about their inability to attain a normal result. One important finding here speaks to the difficulties experienced by women with a diagnosis of CIN1, who may not be discharged, nor offered treatment. We found here that these women were significantly less relieved than those receiving a diagnosis of mild or no abnormalities. Further psychological research might usefully address these issues.

Whilst the present findings speak to the utility of ST for women at high risk, it should be noted that variance in emotional reactions to abnormal smears and colposcopy might be further explained by psychological processes not examined directly here, such as consideration of women's preferred coping style in response to threat and its relationship to the personal motivational relevance of different management strategies (e.g. Miller & Mangan, 1983). Moreover, since the variance in emotion actually explained by management type per se was rather small, and smaller than that explained by appraisal per se, a focus on modifying these appraisal dimensions may have greater impacts on emotional reactions than a change of management type.

A number of limitations of the present study should be acknowledged. It should be noted that the single item measure of relief utilised here is less than optimal. We originally included a number of items derived from a thesaurus in an attempt to form a scale of this construct but were unable to obtain a satisfactory alpha coefficient, suggesting that feelings of relief have a distinctive meaning. Given the utility of assessing relief, as indicated by the results observed here, it would be desirable for future research to seek additional measures of this emotional reaction. Other measures of emotion were derived from previous experimental and field research and have typically been utilized as manipulation checks. It would nonetheless be valuable to pursue the development of standard scales for the assessment of a wide range of emotions. Finally, whilst in the context of our research goal to evaluate theory by extending empirical research to a real-life context it was important to utilize measures used in previous appraisal research, future research might consider the development of multi-item measures of appraisal. It might also be argued that the comparison of management types conducted here was less than optimal, since women were not assigned at random to the two approaches. Nonetheless, we believe the randomised matching procedures utilised here have effectively controlled for differences in socio-economic status, age and disease severity and lead us to have confidence in our findings.

In sum, the present study extends research on appraisal theory into a realistic naturally-occurring encounter. Appraisals were capable of explaining substantive variance in women's emotional reactions to colposcopy and indicate that interventions might focus upon addressing areas of specific motivational incongruence and women's perceived ability to cope with their emotional responses during the procedure. See and Treat management also appears to be evaluated more positively by women, since it was more in line with women's own motives and goals for their visit to the clinic.

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Table 1:

State anxiety before and after colposcopy

<u>Author</u>	<u>Time of assessment</u>	<u>N</u>	<u>State anxiety mean</u>
Wardle et.al., 1995	1 week after receipt of abnormal smear result	14	48.6
Marteau et.al., 1996	8-16 weeks before colposcopy	15	46.2
Gath et.al., 1995	4 weeks before colposcopy	102	36.5
Marteau et al., 1990	Immediately before colposcopy	30	51.2
Marteau et al., 1996	Immediately before colposcopy	64	49.1
Wilkinson et.al., 1990	Immediately before colposcopy	31	49.59
Richardson et.al., 1996	Immediately before colposcopy	109	45.2
Richardson et.al., 1996	Immediately after colposcopy	109	40.9
Wilkinson et al., 1990	Immediately after colposcopy	31	33.35
Orbell et al., 2002 Present study	1 week after colposcopy	1095 332 minor 175 CIN1 453CIN2/3	40.91 38.71 40.24 42.93
Gath et.al., 1995	4 weeks after colposcopy	99	32.91
Richardson et.al., 1996	Immediately pre-treatment	109	48.4
Richardson et. al., 1996	24 weeks after colposcopy	109	39.2
Gath et al., 1995	36 weeks after colposcopy	96	30.90

Note: Where data are derived from intervention studies, control group mean is shown.

Table 2.

Diagnostic outcome by socio-demographic variables, appraisal and emotion

	<u>No/minor abnormalities</u>	<u>CIN 1</u>	<u>CIN2/3</u>	<u>Other diagnosis</u>
<u>Age</u>	38.02 ab	34.05 ac	33.22 bd	38.28 cd
<u>Carstairs</u>	2.15	2.60	<u>2.70</u>	<u>2.46</u>
<u>Motivational relevance</u>	6.26	6.19	6.27	<u>6.20</u>
<u>Motivational congruence</u>	5.03	4.90	4.72	4.88
<u>Motivational incongruence</u>	2.65 a	2.86	3.18 a	3.11
<u>Problem-focused coping potential</u>	4.11	3.87 a	4.28 a	4.16
<u>Emotion-focused coping potential</u>	4.49	4.42	4.58	4.50
<u>Other-accountability</u>	3.21	3.40	3.00	3.21
<u>Self-accountability</u>	3.30	3.64	3.54	3.83
<u>Expectation</u>	4.51	4.65	4.38	4.28
<u>Anxiety</u>	1.94 a	<u>2.01</u>	2.14 a	2.03
<u>Guilt</u>	1.27	1.27	1.33	1.20
<u>Anger</u>	1.24	1.19	1.27	1.18
<u>Embarrassment</u>	1.24	1.26	1.24	1.28
<u>Sadness</u>	1.42 a	1.43	1.59 a	1.45
<u>Relief</u>	2.49 a	2.17 a	2.29	2.38

Means sharing the same subscript differ significantly at $p < 0.05$.

Table 3: Regression of emotion on demographic variables, disease severity and appraisals

Variable	Anxiety			Sadness			Guilt			Anger			Embarrassment			Relief		
	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta
<u>Step 1</u>																		
Age	-.03	.02	.00	.02	.03	.02	.04	.04	.04	-.02	-.01	-.01	-.06	-.04	-.05 ^a	.04	.03	.03
Carstairs	.05	.04	.03	.00	.01	-.03	.03	.04	.02	.03	.04	.01	.05	.06	.03	.03	.03	.05
CIN2/3v.oth	.14 ^b	.13 ^b	.07 ^b	.12 ^b	.10 ^b	.04	.06	.03	-.00	.03	.01	-.03	-.01	-.02	-.06 ^a	-.08 ^a	-.07 ^a	-.02
CIN1 v.oth	.03	.03	.01	.01	-.00	.00	.00	-.01	-.00	-.04	-.04	-.04	.00	-.01	.01	-.10 ^b	-.10 ^b	-.09 ^b
Other Abnormality v. oth	.04	.03	.02	.01	.00	.02	-.04	-.06	-.05 ^a	-.04	-.05	-.04	.02	.01	.02	-.03	-.03	-.02
<u>Step 2</u>																		
Motivational Relevance		.04	.01		.07 ^a	.03		.03	-.00		.02	0.02		.06	.03		.03	.03
Motivational Incongruence		.18 ^b	.07 ^b		.14 ^b	.01		.11 ^b	-.00		.12 ^b	-.02		.14 ^b	.07 ^b			
Motivational Congruence																	.15 ^b	.13 ^b
Problem-focused Coping potential					-.12 ^b	.00								-.07 ^a	-.03			
Emotion-focused Coping potential		-.32 ^b	-.18 ^b											-.09 ^b	.05			
Other-Accountability											.07 ^a	.01		.04	.08			
Self-Accountability								.13 ^b	.12 ^b									
Expectation					-.05	.01												
<u>Step 3</u>																		
Anxiety						.38 ^b						.04			.19 ^b			-.34 ^b

Sadness			.43 ^b						.32 ^b			.40 ^b			.05			-.03
Guilt			.06 ^a			.21 ^b						.17 ^b			.10 ^b			-.00
Anger			.04			.33 ^b			.22 ^b						.35 ^b			-.01
Embarrassment			.14 ^b			.03			.10 ^b			.26 ^b						.08 ^a
Relief			-.20 ^b			-.01			.00			-.02			.07 ^a			
Model FModel R ²	4.36 ^b .02	26.95 ^b .17	94.38 ^b .53	2.59 ^a .01	7.23 ^b .06	112.17 ^b .60	1.66 .01	5.16 ^b .04	52.10 ^b .39	1.81 .00	3.41 ^b .03	82.92 ^b .50	1.52 .01	6.19 ^b .05	36.19 ^b .34	2.83 ^a .01	5.96 ^b .04	14.99 ^b .14
Model Fchange Model R ² change		63.32 ^b .15	168.68 ^b .36		12.88 ^b .05	283.94 ^b .54		10.92 ^b .03	122.55 ^b .36		7.09 ^b .03	204.97 ^b .47		10.78 ^b .04	91.03 ^b .28		13.61 ^b .03	26.63 ^b .10

^a $p < 0.05$, ^b $p < 0.01$

Table 4:

Emotion and appraisal 7 days after the first colposcopy visit amongst matched samples (N = 136)
of women with CIN2 or 3 undergoing ‘See and Treat’ or ‘Diagnosis and Deferred Treatment’

<u>Type of emotion</u>	<u>See and Treat</u>	<u>Diagnose and Defer</u>	
	<u>Mean (st.dev.)</u>	<u>Mean (st.dev.)</u>	<u>t</u>
State anxiety (Spielberger)	41.08 (11.76)	43.98 (14.88)	-1.76* [1]
Guilt	1.29 (.49)	1.35 (.63)	-.82
Anger	1.22 (.48)	1.27 (.56)	-.84
Sadness	1.49 (.67)	1.65 (.85)	-1.62
Embarrassment	1.18 (.36)	1.28 (.56)	-1.74* [1]
Relief	2.68 (1.02)	2.11 (.10)	4.52**
Motivational relevance	6.19 (1.70)	6.30 (1.27)	-.57
Motivational incongruence	3.29 (1.85)	3.08 (1.72)	.96
Motivational congruence	4.99 (1.86)	4.62 (1.69)	1.68* [1]
Emotion-focused coping potential	4.57 (1.64)	4.59 (1.64)	-.10
Problem-focused coping potential	4.47 (1.61)	4.06 (1.51)	2.16*
Self-accountability	3.68 (2.18)	3.56 (1.51)	.51
Other-accountability	2.92 (2.09)	2.94 (1.82)	-.09
Expectation	4.43 (1.59)	4.39 (1.35)	.23

* $p < 0.05$

[1.] one-tailed test

Table 5:

Desirable aspects of colposcopy experience

<u>Category and category exemplars</u>	<u>See and Treat</u> <u>% making comment</u>	<u>Diagnose and Defer</u> <u>% making comment</u>
<u>Procedural explanation and respect</u> “ I was treated with dignity and respect and my questions were answered honestly” “I managed to watch everything on the TV which made me more comfortable and the doctor and nurse were very helpful in explaining what was what” “Checked I understood procedure prior to beginning. Explained during the procedure. Staff extremely understanding and supportive” “The fact that they understood my feelings of terror and powerlessness and completed treatment at the same time as colposcopy”	33	27
<u>Immediate treatment</u> “I was attended to on the day of my appointment and did not have to return another time, I was grateful” “To get it over and done with and the abnormal cells removed” “ Treatment administered straight away- no waiting and worrying” “If I needed treatment to have it at the time” “Relief of having it over with” “Treatment carried out promptly and the staff were brilliant” “The thought of getting rid of risky cells on my cervix”	26	2
<u>Diagnostic information</u> “ They told me why I had to go to the hospital and what is wrong with me because I didn ’t know” “ Assured my problem was curable” “Being told immediately that there wasn ’t any cancer cells” “Doctor told me then and there what was wrong”	2	10

Appendix 1: Pattern Matrix for Items Assessing Guilt, Anger, Sadness and Embarrassment.

(Principal Axis Factoring with Oblimin Rotation)

	<u>Factor One</u>	<u>Factor Two</u>	<u>Factor Three</u>	<u>Factor Four</u>
<u>Sadness</u>				
Sad	.97	.02	-.03	-.04
Sorrowful	.81	-.02	-.03	.04
Downhearted	.60	.12	.03	.14
<u>Embarrassment</u>				
Embarrassed	.03	.74	.02	-.05
Disgraced	.05	.74	.05	.09
Humiliated	.00	.96	-.05	-.00
<u>Guilt</u>				
Guilty	-.08	.02	.85	-.03
Regretful	.12	.03	.62	.06
Sorry	.31	.00	.37	.07
<u>Anger</u>				
Furious	-.04	.02	-.08	.90
Enraged	-.03	-.06	.08	.84
Irate	.07	.08	-.01	.67
Angry	.26	.08	.15	.43
Mad at the world	.21	.07	.08	.36
<u>Eigenvalue</u>	6.64 (47%)	1.44 (10%)	1.17 (8%)	.88 (6%)