Information, social support and anxiety before gastrointestinal endoscopy

Judith Eberhardt¹, Anna van Wersch¹*, Paul van Schaik¹ and Paul Cann²

¹School of Social Sciences and Law (Psychology Section), University of Teesside, Middlesbrough, UK
²Endoscopy Centre, James Cook University Hospital, Middlesbrough, UK

**Objectives.** To examine Lazarus and Folkman’s (1984) stress theory regarding the effects of the stress mediators information and perceived social support on anxiety (as the stress response) regarding gastrointestinal (GI) endoscopy (as the stressor) in male and female patients of various age groups.

**Design.** Non-experimental design.

**Methods.** Structured interviews were conducted with 113 hospital out-patients about to undergo GI endoscopy. Participants indicated their perceptions of how much support and how much clear and useful information they had received from both their general practitioner (GP) and a patient information leaflet developed in collaboration with health psychologists as well as their perceptions of how much social support they had obtained from other patients, family and friends. Anxiety was measured with a population-specific trait and state adaptation of the Hospital anxiety and depression scale (HADS-A).

**Results.** Psychometric exploration of the HADS-A revealed a single general anxiety factor. The reliability of this factor was high, with Cronbach’s α = 0.91. The majority of the sample experienced high anxiety levels. Gender, but not age, differences emerged, showing females to be more anxious than males, F(1, 84) = 5.68, p < .05. A regression model built on stress theory was tested, with anxiety as the dependent variable and 11 predictor variables. The model was significant with R² = 0.452, F(11, 47) = 3.522 and p = 0.001.

**Conclusions.** The clarity, but not the amount, of information and social support from important others, but not GPs, were both mediating the stress experience of the patients by reducing their perceived anxiety.

Endoscopy, involving the direct visual examination of any part of the interior of the body by means of an optical viewing instrument (NHS Modernisation Agency, 2003), is one of
the most frequently performed procedures in medicine today (Maguire, Walsh, & Little, 2003). Gastrointestinal (GI) endoscopy (examination of the stomach or the colon) is an important diagnostic tool in colorectal cancer, which is a significant health issue in the United Kingdom; one case in seven and one death in nine from cancer in both men and women is due to colorectal cancer (Department of Health, 1999). GI endoscopy is a procedure associated with anxiety (Van Vliet, Grypdonck, Van Zuuren, Winnubst, & Kruitwagen, 2002) and has been recognized as a highly stressful procedure. For example, Cheng, Hui, and Lam (2002) describe endoscopy as a highly relevant real-life stressor and Tønnesen, Puggaard, Øvesen, Rasmussen, and Rosenberg (1999) have studied the stress response to endoscopy. Gebbensleben and Rohde (1990) highlighted the need for the exploration and development of interventions to relieve fears and worries concerning this stressful intrusive procedure.

Applied to Lazarus and Folkman’s (1984) stress theory, the experience of endoscopy can be constructed as a stressor and anxiety as a stress response at the theoretical level of primary appraisal. According to this theory, the stress experience can be mediated at the level of secondary appraisal by various people-, social- and environment-related variables. Apart from the gender and age-related differences in the perceived stress response, other mediating variables frequently studied in endoscopy and other anxiety-provoking procedures in health care are the provision of information and social support, as will be shown in the following paragraph.

Research on pre-endoscopy anxiety has consistently found that males showed lower anxiety than females (Aabakken, Baasland, Lygren, & Osnes, 1997; Abuksis et al., 2002; Karanci & Dirik, 2003) and that younger people exhibited higher anxiety than older people (Aabakken et al., 1997; Mulcahy et al., 2001; Soma et al., 2001). As a mediating factor, preparatory information, in written as well as audio-visual presentation forms, has been found to be effective in most studies on anxiety reduction prior to endoscopy (e.g. Abuksis et al., 2002; Hackett, Lane, & McCarthy, 1998). More concretely, Maguire et al. (2003) showed that information resulted in a greater reduction of anxiety than behavioural intervention. Contrary to Karanci and Dirik’s (2003) results indicating that anxiety reduction depends on coping style, Van Vliet et al. (2002) found that matching information to coping styles did not result in more beneficial effects on patients’ anxiety. Lembcke, Specht, Nippel, and Caspary (1998), in their research comparing three forms of information provision, concluded that the significant reduction in anxiety was related to the appropriate selection of information material. Lanius et al. (1990) did not find a difference in anxiety between patients who did and did not receive a patient information booklet. They suggested that an individualized approach might be more effective in reducing anxiety about endoscopy procedures. Nearly two-thirds of Munch, Sabri, and Altorfer’s (1997) sample showed a reduction in anxiety after the use of an audio-visual computer information programme.

According to the NHS Modernisation Agency (2003), information about impending endoscopy is usually provided in several forms, such as through a letter sent by the hospital, verbally by the general practitioner (GP), consultant or endoscopic nurse and through information leaflets. In a study comparing these different sources, Aabakken et al.’s (1997) sample of endoscopy patients indicated that they had received more important information from the printed information booklet than from their referring doctor (79% vs. 31%). However, several studies have shown that support, in the sense of feeling listened to and being cared for in an empathic, warm and personal way by their doctors, nurses and other health care professionals, was more important for patients’ satisfaction (Robbins et al., 1993; Roter, 1977; Stiles, Putnam, Wolf, & James, 1979) and
quality of life (Bensing, 1991) than the provision of necessary information (Williams & Calnan, 1991). Warwick, Joseph, Cordel, and Ashworth (2004) found in their qualitative study of people with chronic pelvic pain that patients not only valued obtaining emotional and social support from doctors, but also from partners, family, friends, acquaintances, nurses and fellow patients.

From these studies it is unclear whether patients expect more support than information from health professionals or whether support is expected to come more from other patients, family or friends. Thus far, no studies have distinguished social support from information in relation to endoscopy preparation research. However, studies did highlight the importance of social support in reducing anxiety in other medical conditions such as prostate cancer (Balderson & Towell, 2003), coping with bypass surgery (Elizur & Hirsch, 1999) and head and neck cancer (Van Wersch et al., 1997).

In the study described in this paper, the relationship between information and social support was examined in relation to anxiety in GI endoscopy preparation. Based on the literature, it was hypothesized that provision of information, clarity and usefulness of information and perceived social support would be inversely related to anxiety. Furthermore, based on previous research, higher anxiety levels were expected for both females and younger patients.

Method

Study design
A non-experimental study design was developed as an outcome of a close collaboration between gastroenterologists and university-based chartered health psychologists, with the aim of improving patient preparation for endoscopy. Both a patient information leaflet, based on recommendations from Coulter, Entwistle, and Gilbert (1998), Newton et al. (1998), Raynor (1998) and Wright (1998), and a preparation-screening tool were developed, implemented and evaluated.

Sample
A sample of 113 patients (50 males and 63 females) attending a gastrointestinal examination at the endoscopy centre of a university hospital in the northeast of England for the first time consented to participate in the study. Their age ranged from 17 to 83, $M = 54.13$ ($SD = 15.60$). Power analysis revealed a power of 0.81 for a multiple regression analysis with 11 predictors, a large effect size ($R^2 = 0.26$) and $\alpha = 0.05$. This is a good sample size according to Simon’s (1999) rule in which a distribution of observations should have a power of at least .8 with $\alpha = 0.05$ and $\beta = 0.2$. This rule implies that a Type I error is four times more costly than a Type II error, which is also supported by Granaas (1999) in his discussion of the problems with over-powered studies.

Procedure
One week before the hospital appointment, information about both the study and the leaflet were sent out by the endoscopy centre’s receptionist, together with the standard dietary preparation sheet. On arrival at the hospital, patients were approached by a health psychology researcher to enquire about possible participation in the study. After
written consent had been obtained, patients were assessed with the compact screening tool in which the most relevant questions were asked in a focused and non-elaborative way. The reason for this was that patients were requested to answer the questions of the screening tool just before the anxiety-provoking procedure of endoscopy. The screening tool consisted of three parts: firstly, ‘Personal Information’ with questions about age and gender; secondly, ‘Information and Support’ which were measured with the specific items of an information and social support scale adapted for endoscopy that has been used and validated in previous research (Van den Borne & Pruyn, 1985; Van Wersch et al., 1997). Answers were given in a 4-point Likert format for the following perceived stress mediators: amount of information and support as well as the clarity and usefulness of information from the following sources: the GP, the patient information leaflet received from the hospital and other patients, family or friends. Thirdly, anxiety was measured with an endoscopy-specific adaptation (HADS-A) of the anxiety subscale of the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983). The HADS has very good internal consistency, good concurrent validity and generally seems to have screening properties at least as good as similar, more comprehensive instruments used for the identification of anxiety and depression (Bjelland, Dahl, Haug, & Neckelmann, 2002). Because of the nature of endoscopy as a highly anxiety-provoking procedure, using only the anxiety scale would not discriminate between patients with an anxious personality and patients anxious because of the envisaged endoscopy procedures. For that reason, the anxiety scale was elaborated and adapted in such a way that the seven anxiety items were doubled to reflect state and trait anxiety. For example, the phrase ‘since I found out that I had to come to hospital’ was added to the existing items of the HADS anxiety subscale to measure the state anxiety concept and ‘in general’ was added to the same seven items in order to measure the trait anxiety concept (see Table 1).

**Analysis**
The psychometric properties of the adapted and elaborated state and trait anxiety scale were explored with the use of the statistical package for the social sciences (SPSS). Factor analyses using principal components, principal axis factor and maximum likelihood as extraction methods showed no evidence for a two-factor solution with the state and trait anxiety as factors. Instead, a one-factor solution was identified (see Table 1). The reliability of this general anxiety factor as a scale was high, with Cronbach's $\alpha = 0.91$; subsequently, trait and state items were combined to increase variance and outcome power. The general anxiety values range from 1 to 4, with lower values indicating higher anxiety. A one-way ANOVA was performed to examine whether there were age and gender differences in anxiety. After checking the data for normality, collinearity and homoscedasticity, a multiple regression model was tested in order to predict anxiety as an outcome variable from a set of predictor variables identified in previous research. The 11 predictor variables (see Table 2) were perceived amount, usefulness and clarity of GP and leaflet information, support from the GP, leaflet, other patients, family and friends, age and gender.

**Results**
The level of anxiety was high with $M = 2.08 (SD = 0.676)$ and CI (95) = [1.944; 2.223]. The one-way ANOVA showed no significant interaction effect.
Table 1. Factor loadings for the adapted and specially constructed state and trait HADS-A

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor loading*</th>
</tr>
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<tbody>
<tr>
<td>In general, I feel tense or ‘wound up’.</td>
<td>0.770</td>
</tr>
<tr>
<td>Since I found out that I had to come to hospital, I have felt tense or ‘wound up’.</td>
<td>0.813</td>
</tr>
<tr>
<td>In general, worrying thoughts go through my mind.</td>
<td>0.800</td>
</tr>
<tr>
<td>Since I found out that I had to come to hospital, worrying thoughts go through my mind.</td>
<td>0.799</td>
</tr>
<tr>
<td>In general, I can sit at ease and feel relaxed.</td>
<td>0.611</td>
</tr>
<tr>
<td>Since I found out that I had to come to hospital, I can still sit at ease and feel relaxed.</td>
<td>0.650</td>
</tr>
<tr>
<td>In general, I get a sort of frightened feeling like ‘butterflies’ in the stomach.</td>
<td>0.698</td>
</tr>
<tr>
<td>Since I found out that I had to come to hospital, I get a sort of frightened feeling like ‘butterflies’ in the stomach.</td>
<td>0.678</td>
</tr>
<tr>
<td>In general, I feel restless as if I have to be on the move.</td>
<td>0.570</td>
</tr>
<tr>
<td>Since I found out that I had to come to hospital, I feel restless as if I have to be on the move.</td>
<td>0.634</td>
</tr>
<tr>
<td>In general, I get sudden feelings of panic.</td>
<td>0.714</td>
</tr>
<tr>
<td>Since I found out that I had to come to hospital, I get sudden feelings of panic.</td>
<td>0.752</td>
</tr>
</tbody>
</table>


Table 2. Predictors in multiple regression model of patient anxiety

<table>
<thead>
<tr>
<th></th>
<th>β</th>
<th>t</th>
<th>p</th>
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<tbody>
<tr>
<td>Age</td>
<td>−0.110</td>
<td>−0.929</td>
<td>.358</td>
</tr>
<tr>
<td>Gender</td>
<td>0.353</td>
<td>2.883</td>
<td>.006**</td>
</tr>
<tr>
<td>Amount of information received from general practitioner.</td>
<td>−0.182</td>
<td>−1.265</td>
<td>.212</td>
</tr>
<tr>
<td>Amount of information received from information leaflet from the hospital.</td>
<td>0.444</td>
<td>2.254</td>
<td>.029*</td>
</tr>
<tr>
<td>Support received from general practitioner.</td>
<td>0.055</td>
<td>0.341</td>
<td>.734</td>
</tr>
<tr>
<td>Support received from patient information leaflet that you received from the hospital.</td>
<td>−0.074</td>
<td>−0.415</td>
<td>.680</td>
</tr>
<tr>
<td>Support from other patients/family/friends.</td>
<td>−0.278</td>
<td>−2.304</td>
<td>.026*</td>
</tr>
<tr>
<td>Usefulness of information received from general practitioner.</td>
<td>0.224</td>
<td>1.997</td>
<td>.278</td>
</tr>
<tr>
<td>Usefulness of patient information leaflet received from the hospital.</td>
<td>0.194</td>
<td>1.065</td>
<td>.292</td>
</tr>
<tr>
<td>Clarity of information received from general practitioner.</td>
<td>0.025</td>
<td>0.134</td>
<td>.894</td>
</tr>
<tr>
<td>Clarity of patient information leaflet received from the hospital.</td>
<td>−0.724</td>
<td>−3.625</td>
<td>.001***</td>
</tr>
</tbody>
</table>

Note. * < .05, ** < .01, *** < .001.
A significant main effect was found for gender, $F(1, 84) = 5.68, p < .05$, but not for age, indicating that female participants were more anxious than male participants.

The multiple regression model had a good fit ($R^2 = 0.452$) and the overall relationship between predictors and outcome was significant, $F(11, 47) = 3.522, p = 0.001$. With other variables held constant, the following predictors were significant (see Table 2): perceived amount of information received from the patient information leaflet was positively related to anxiety, clarity of the patient information leaflet was negatively related to anxiety, perceived support from other patients, family and friends was negatively related to anxiety and gender was associated with anxiety, with females more anxious than males.

**Discussion**

The findings show that women experience higher levels of anxiety before endoscopy than men. This is in line with existing literature (Aabakken *et al.*, 1997; Abuksis *et al.*, 2002; Karanci & Dirik, 2003). In contrast to previous findings (Aabakken *et al.*, 1997; Mulcahy *et al.*, 2001; Soma *et al.*, 2001), age differences in anxiety relating to endoscopy were not found.

The multiple regression analysis revealed that, in relation to the other significant predictors, the more information gained from the patient information leaflet, the more anxious patients were. This is contradictory to findings that have shown an association between increased information and decreased anxiety before endoscopy (Abuksis *et al.*, 2002; Hackett *et al.*, 1998; Maguire *et al.*, 2003; Van Vliet *et al.*, 2002) and indicates that merely distributing leaflets to patients is not effective and could lead to opposite outcomes, such as making patients more worried.

Nevertheless, the clearer this information was perceived to be, the less anxious patients were about their impending endoscopy. Different forms of information may be suitable for different patients; thus, some patients may be more receptive to audio-visual or even interactive means of information provision; for example, interactive multimedia education programmes (Flynn *et al.*, 2004; Munch *et al.*, 1997) or watching an endoscopy procedure on a television monitor (Gebbensleben & Rohde, 1990) have been found to be effective information forms.

Regarding social support, it was found that the more support perceived from other patients, friends and family, the less anxious patients were when receiving clear information. This replicates the findings of previous research (Balderson & Towell, 2003; Elizur & Hirsch, 1999; Van Wersch *et al.*, 1997) and confirms the buffering hypothesis of social support in stress theory, which states that stressful events produce less distress for people who have social support than for people who do not (e.g. Kornblith *et al.*, 2001; Lazarus & Folkman, 1984; Terry, 1991). However, perceived support from the patient’s GP did not emerge as a significant predictor of anxiety in the present study, contrary to the findings of Van Wersch *et al.* (1997).

A limitation of this study was the absence of permission to use patients’ files to obtain clinical data, due to long-winded ethical procedures in the hospital. It is possible that different indications (e.g. abdominal pain, bleeding or dyspepsia) are linked to different levels of anxiety. In addition, any family history of bowel or colon cancer might have had a separate impact on their pre-procedural anxiety and would be interesting to explore in future studies.

To conclude, this deductive study examined two mediating variables in applying Lazarus and Folkman’s (1984) stress theory to endoscopy. Future research could explore
this theory further using creative, innovative health psychology-related applications. A way forward from the results of this study would be the development, implementation and evaluation of an interactive multimedia education CD-ROM for endoscopy in line with studies conducted for other medical conditions, such as those by Munch et al. (1997) and Flynn et al. (2004). By using this system, patients can select topics about which they want to know and they can choose to click on further menus to enhance their understanding. This will also be in line with the recommendations of Lanius et al.’s (1990) study to attune information at an individual level. Using this approach would bring the amount and clarity of information more under patients’ control. For example, they could, with or without the presence of a health psychology researcher, endoscopy nurse, friend or relative, look at the anatomy of the digestive system by means of pictures, follow the medical procedures in animated form or watch a video clip of a relaxation session. As far as the latter is concerned, it would kill two birds with one stone because both imagery relaxation techniques (Salmore & Nelson, 2000) and progressive muscle relaxation (Carlson & Hoyle, 1993) have been shown to be associated with a reduction in anxiety in endoscopy patients. The implementation of these relaxation techniques in regular care is still difficult. By incorporating stress management techniques as a menu in an interactive electronic patient education programme, the political, ethical and organizational issues inhibiting health psychology-based innovations in endoscopy care could be avoided.

References


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