



Bodily embarrassment and judgment concern as separable factors in the measurement of medical embarrassment: Psychometric development and links to treatment-seeking outcomes

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Objectives. Understanding why people do not always engage in medical examinations that might benefit them is a public health issue which is receiving increased attention. One area of promise involves the study of medical embarrassment, although current studies are weakened in that they measure medical embarrassment in a theoretically naïve and unidimensional manner and have assumed that embarrassment is exclusively a barrier to the timely seeking of treatment.

Design. Convenience sampling was used to recruit 116 male and 134 female students (mean age = 19.94 years, 47.2% Caucasian, 20.4% African-American, 32.4% Asian) from two large universities in different parts of the United States.

Methods. Participants completed a comprehensive measure of medical embarrassment, reported on previous treatment avoidance because of embarrassment, and recorded the frequency of psychological, general and sex-related visits across the previous 5 years.

Results. As expected, medical embarrassment was not unidimensional and appeared to have two distinct factors – bodily embarrassment and judgment concern. Bodily embarrassment generally predicted less frequent medical contact although not equally so across domains and it interacted with judgment concern in several cases, providing preliminary evidence that there are situations in which aspects of medical embarrassment may actually facilitate greater medical contact.

Conclusions. The data highlight the importance of considering the role of emotions other than fear in health behaviour and the means by which they may facilitate or deter the timely seeking of diagnosis and treatment.

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That people do not always engage in the medical examinations and treatments that would be most beneficial for them is a perennial issue in behavioural health research. In addition to the clear and present threat to patient's current and future physical health, chronic avoidance may also create esteem issues and increase over time (Moore, Brodsgaard, & Rosenberg, 2004). There are many reasons behind individuals' decisions to avoid or forego medical treatments or examinations that they might, in other circumstances, deem necessary. Historically, preventive research has concentrated on socio-demographic and structural facilitators and barriers as well as, more recently, cognitive factors such as estimates of risk and perceived efficacy. Other research has begun to consider the role played by emotions (Mayne, 1999, 2001), notably fear/anxiety (Consedine, Magai, Krivoshekova, Ryzewicz, & Neugut, 2004). Most recently, however, researchers have begun to seriously examine how another discrete emotion – embarrassment – may influence an individual's willingness to participate in a number of essential health behaviours.

Practitioners in an array of different medical disciplines have long been aware that embarrassment or the threat of embarrassment prevents people seeking medical assistance for intimate matters, even when they are concerned about serious symptoms (Shaw, Williams, Assassa, & Jackson, 2000; Shinn *et al.*, 2004) and are aware that the embarrassment-inducing health behaviour is important (Leary & Dobbins, 1983). This clinical wisdom is reflected in the bulk of current research which, thus far, has assumed that embarrassment acts as a barrier to the seeking of medical treatments and examinations (e.g. Consedine, Magai, & Neugut, 2004; McKie, 1993; Meerabeau, 1999).

Although an individual's level of medical embarrassment potentially influences the decision to engage or not engage in almost all medical examinations, the most concerted research efforts to date have been concentrated on how embarrassment may relate to dental visit frequency (Berggren, Carlsson, Gustafsson, & Hakeberg, 1995; Moore, Brodsgaard, & Birn, 1991; Moore *et al.*, 2004), incontinence (Hagglund, Walker-Engstrom, Larsson, & Leppert, 2003; Horrocks, Somerset, Stoddart, & Peters, 2004; Kinchen *et al.*, 2003; Shaw *et al.*, 2000), and participation/non-participation in various types of cancer screenings, including those of the breast (Bobo, Dean, Stovall, Mendez, & Caplan, 1999; Buki, Borrayo, Feigal, & Carrillo, 2004; Consedine, Magai, & Neugut, 2004; Crump, Mayberry, Taylor, Barefield, & Thomas, 2000; Goldman & Risica, 2004; Thompson, Montano, Mahloch, Mullen, & Taylor, 1997), testicles (Gascoigne, Mason, & Roberts, 1999), cervix (Taylor *et al.*, 2002) and colon (Farraye *et al.*, 2004; Harewood, Wiersema, & Melton, 2002; Rawl, Menon, Champion, Foster, & Skinner, 2000). Conversely, a small number of studies have shown that the absence of embarrassment when talking to physicians about health issues (e.g. urinary incontinence) was a significant factor in women seeking medical care (Hagglund *et al.*, 2003; Kinchen *et al.*, 2003).

In many ways, the fact that research has converged on this 'barrier' perspective is not surprising. Qualitative analyses have shown that medical procedures that are intimate in nature (e.g. gynaecological, urological or incontinence procedures) produce feelings of anxiety and embarrassment in patients (Shaw *et al.*, 2000). In the context of treatment seeking (or avoidance) for dental issues, for example, it has been suggested that poor dental health may create feelings of embarrassment which, in turn, creates anxiety in the patient and thus avoidance of dental settings (Berggren *et al.*, 1995). Consistent with this assertion, at least one small study has shown that patients frequently report concern over being judged for their poor dentition and poor history of health behaviour (Moore *et al.*, 2004). However, and as we expand upon below, embarrassment about poor

dentition outside the dental setting was also one of the *primary reasons that patients sought dental treatment* while pressing issues such as degree of pain did not seem to relate to behaviour (Moore *et al.*, 2004).

This general consensus noted, several issues remain unexplored or unclear. First, the bulk of the available research has examined the role of embarrassment on involvement with very specific screenings or appointment types, typically involving areas of health and the body that are particularly intimate, private, and socially sensitive, and thus likely to elicit particularly high levels of embarrassment. While the study of such phenomena represents a sensible beginning to the study of medical embarrassment, the consequence is that researchers know little about the role of medical embarrassment in general health behaviour. This is important for, in many situations and health coverage plans, the primary care physician (PCP) acts as the medical establishment's *de facto* 'gatekeeper', providing basic information to patients, recommending (or not recommending) certain tests, controlling specialist referrals, and so on. Since the examination of many health issues arises because of patient concern over symptoms, it is important that researchers gain a broader understanding of how embarrassment relates to general as well as specific health behaviours.

Second, the measurement of medical embarrassment has lagged some distance behind its conceptual treatment in emotions theory. According to the literature on emotions, embarrassment arises in response to a host of elicitors (Higuchi & Fukada, 2002; Keltner & Anderson, 2000; Miller, 1992) which, although varied, are linked in that the individual feels (or fears) that they are being negatively or undesirably evaluated by others (Manstead & Semin, 1981; Miller, 1996; Modigliani, 1971), that they have violated a social norm (Keltner & Anderson, 2000), and/or in the presence of an awkward social interaction (Parrott, Sabini, & Silver, 1988). There is, in other words, a discrepancy between self-presentation and the perceived social standard for self-presentation (Edelmann, 1985).

Normative situations eliciting embarrassment include physical ineptness or inadequacy, cognitive shortcomings (Keltner & Buswell, 1996), loss of control or poise (Miller, 1992) and failure at privacy regulation (Buss, 1980; Keltner & Anderson, 2000), typically in the presence of strangers (Tangney, Miller, Flicker, & Barlow, 1996). Experientially, embarrassment is characterized by feelings of awkwardness, foolishness, chagrin and a heightened self-awareness (Edelmann, 1985; Keltner & Anderson, 2000; Miller, 1992); it is, most probably, the aversive experiential or felt aspect of embarrassment that promotes so much avoidance of the medical situations eliciting it.

Although this characterization tends to support an 'avoidance' model of embarrassment, emotions theory is also clear in offering a more differentiated picture. Functionally, embarrassment is thought to have evolved as a fitness-enhancing mechanism that prevented social ostracism, although it should be noted that there may well be differences between the historical situations embarrassment was 'designed' to remedy, and those within the modern adaptive environment; a degree of 'misfit' may sometimes occur. Emotions theory suggests that emotional states can be motivational *in anticipation* (Averill, 1968; Frijda, 1994) and that emotions such as embarrassment, shame and guilt may serve as social regulators by motivating *prosocial* behaviours that *prevent* their occurrence (Frijda, 1994). Put simply, embarrassment may also lead individuals to engage in health behaviours in response to symptoms that are already embarrassing or because they fear being embarrassed for not having undertaken the behaviour.

Although the implications of this rich perspective for health behaviour have yet to be systematically examined, recent theoretical work examining another emotion with complex links to secondary preventive health behaviours – fear/anxiety – is clear in making several further points. First, embarrassment, like fear, is not a unidimensional construct with simple links to outcome (Consedine, Magai, Krivoshekova *et al.*, 2004). Instead, understanding the role of an emotion in health behaviours is predicated on understanding *exactly* what it is that frightens or, in this case, embarrasses, a person. Thus, it is insufficient to understand that people are embarrassed by colorectal cancer screening and thus may not screen. Instead, we must know whether they are simply embarrassed by the prospect of having something inserted into their rectum, whether it is about being touched, whether it relates to obesity or their having poor skin, whether they worry about the thoughts the technician has during the procedure, about their response to possible pain, about other people seeing them, and so forth.

This highly differentiated theoretical approach can be contrasted with the typical operationalization of embarrassment in health research in which embarrassment is assessed with a single item (e.g. Consedine, Magai, & Neugut, 2004; Farraye *et al.*, 2004; Hagglund *et al.*, 2003; Kinchen *et al.*, 2003; Roberts *et al.*, 1994) or via qualitative interviews (Buki *et al.*, 2004; Gascoigne, Mason, & Roberts, 1999; Moore *et al.*, 2004; Shaw *et al.*, 2000; Thompson *et al.*, 1997). *Across* studies, however, we can see that people are embarrassed by a number of elements: by the presence of medical students or other observers (Shaw *et al.*, 2000), by a fear of awkward interactions (Parrott *et al.*, 1988), by having genitals touched by same-sex or opposite-sex doctors (Gascoigne *et al.*, 1999), through a lack of privacy (Shaw *et al.*, 2000) or concerns regarding the prospect of appearing to be a hypochondriac (Gascoigne *et al.*, 1999). The current study assesses medical embarrassment in nine areas or domains and captures both the interpersonal bodily awkwardness and the concern about negative judgment that appear to typify the phenomenon. It presents preliminary reliability and validation data in the development of a comprehensive general measure of medical embarrassment.

There are, furthermore, strong theoretical reasons to suspect that some aspects of embarrassment may actually *promote* a superior health behaviour profile. In one study of urinary incontinence, for example, men who had severe and/or more frequent symptoms reported greater embarrassment (Roberts *et al.*, 1994). More importantly, men who were bothered by symptoms that could be observed by social others (e.g. wet pants, dribbling, frequent daytime urination) were *more likely* to visit a doctor than those less bothered. Among men who were not bothered by their symptoms, those who were more embarrassed were 17 times more likely to see a doctor than men who felt little embarrassment, although this ratio dropped to 8 after annual income was controlled (Roberts *et al.*, 1994). Similarly, a qualitative study of embarrassment about poor dentition found that embarrassment outside the dental setting was a major motivator in seeking dental care (Moore *et al.*, 2004).

More generally, if, as argued above, medical embarrassment is a complex phenomenon involving simultaneous concerns about bodily inadequacy and negative social judgments it seems likely that these components may relate differently to behavioural outcome. In the context of fear/anxiety, we have previously argued that effect of the emotion on a target health behaviour is determined, in part, by the object of the fear and thus the extent to which the behaviour will alleviate or increase felt emotion (Consedine, Magai, Krivoshekova *et al.*, 2004). Similarly, our reading of the emotions literature led us to suspect that levels of bodily embarrassment should be negatively related to health behaviour in our samples of students – avoidance of the

embarrassment-eliciting setting being the best medicine. Conversely, however, we suspected that concern about negative social judgments might act to facilitate more frequent contact with health professionals in some contexts.

Finally, despite ethnic differences in the frequency of physical and mental health service contacts (ACS, 2003; Alvidrez, Arean, & Stewart, 2005; Cooper-Patrick *et al.*, 1999; Gilligan, Wang, Levin, Kantoff, & Avorn, 2004), there has been little systematic examination of race and sex differences in either mean levels of medical embarrassment or their links to health behaviour outcomes. One recent study that directly compared men's and women's attitudes to flexible sigmoidoscopy (a colorectal cancer screening test) found that women were more than five times as likely to report thinking the procedure 'very embarrassing'; 55% of men reported 'not being embarrassed' compared with only 31% of women (Farraye *et al.*, 2004). Other research shows that women may be more intensely embarrassed (Miller, 1992, 1995), that self-reported blushing propensity is higher among women (Bögels, Alberts, & de Jong, 1996) and that women are generally at greater risk for issues related to body dissatisfaction (Wichstrom, 1999). Taken together, this may suggest that the bodily aspects of medical embarrassment should be higher among women. We are, however, aware of no evidence that suggests that the relation between the different components of medical embarrassment and behavioural outcomes may vary as a function of gender. The current study specifically tests whether levels of general medical embarrassment differ in samples of young men and women and whether the link between embarrassment and behaviour is equivalent across genders.

Few studies have reported on ethnic differences in embarrassment or medical embarrassment. One study suggestive of greater bodily embarrassment among African-Americans found that African-American men were twice as likely as White men to choose private prostate cancer appointments over mass screening (Barber *et al.*, 1998). Conversely, however, at least one other study has also shown marked ethnic differences in embarrassment regarding mammography. In this study, African-American women reported significantly *less* embarrassment than European-American women (Consedine, Magai, & Neugut, 2004), although embarrassment was also associated with greater education in this study. Other studies suggest that Asian groups may be more prone to embarrassment than European-Americans (Singelis, Bond, Sharkey, & Lai, 1999; Singelis & Sharkey, 1995) and that their conformity to avoid judgment may also be high. Owing to these differences we accessed groups of European-Americans, African-Americans and Asian-Americans. We suspected that bodily embarrassment would be higher among Asian-Americans. However, given the absence of studies examining the effects of embarrassment components to behavioural outcome across groups, we did not make any predictions regarding possible ethnic interactions.

Method

Participants

Participants in the study were drawn from two student samples located at large East Coast (EC) and West Coast (WC) universities and recruited for partner projects on 'emotions and health behaviour'. Owing to our interest in ethnic and sex differences in medical embarrassment, we utilized ethnic variation in the student populations to recruit groups of Asian, African-American and Caucasian participants. In the WC sample, 84 females and 65 males (54% Asian, 46% Caucasian) were taken from a psychology

department's undergraduate subject pool and participated in exchange for partial fulfillment of course credit for a psychology class. In the EC sample, 50 females and 51 males (51% African-American, 49% Caucasian) participated in return for a \$10 honorarium. Descriptive statistics on the demographic characteristics for the men and women entering the study from the two samples are given below (see Table 1). Overall, the mean age of the sample was 19.94 years ($SD = 1.59$), 53.6% were female, 47.2% were Caucasian, 20.4% African-American and 32.4% Asian. The mean household income across the sample was \$64,932 ($SD = \$47,924$) and the sample reported having had an average of 13.66 years of education ($SD = 1.54$).

Procedures

Permission to conduct the study was obtained from both participating Institutional Review Boards and data were collected over the course of 3 months during 2004–2005. In each recruitment setting, participants were placed alone in interview rooms where they completed a consent form that assured them of anonymity, then completed a demographics form, an extensive measure designed to assess participants' tendencies towards medical embarrassment, a measure of previous avoidance of medical contacts due to embarrassment, and a measure assessing the presence of major medical/psychological conditions and the frequency of a variety of medical contacts across the previous 5 years. These shared measures were administered in a standard order for respondents at both recruitment sites with the EC sample then completing additional measures of dispositional embarrassability and social desirability. This difference arose because of logistic considerations.

Measures

Demographics questionnaire

A demographic questionnaire elicited information regarding self-reported race, age, education and household income. Owing to our interest in possible ethnic differences as well as the validity of the medical embarrassment measure in diverse groups (below), we specifically recruited groups of Caucasians, Asians and African-Americans.

Medical embarrassment

Given the absence of comprehensive medical embarrassment questionnaires, a comprehensive measure was specifically developed for the current project. A large list of items was initially developed based on either (a) their use in prior research or (b) theoretical considerations regarding the elicitors, structure and functions of embarrassment. The list of questions was then examined by two experienced emotions researchers (CH and NC) for likely item redundancy and clarity and a final list of 53 items was agreed upon (see Appendix). Participants rated each item on a 1 (Not at all/never) to 5 (Very much/always) scale.

A priori, items were grouped into nine potentially separable categories of embarrassment (note: an 'R' item indicates a reverse-coded item): about the body (items 1, 5, 11, 15, 21R, 25, 30, 39, 44, 49R), about genital examinations (items 2, 12, 22R, 31, 40, 45, 50), bodily functions (items 3, 13, 23, 32, 41, 51), about being ill (items 4, 14, 24R, 33, 42), about the public exposure associated with medical visits (items 6, 16, 26, 34R, 43), about being viewed as a hypochondriac (items 7, 17, 27R, 35, 46, 52),

Table 1. Means and standard deviations of key study variables as a function of participant race and sex

Variables	African-Americans		Caucasians		Asian-Americans	
	Male (N = 26)	Female (N = 25)	Male (N = 52)	Female (N = 66)	Male (N = 38)	Female (N = 43)
Age	20.31 (2.07)	19.24 (1.17)	20.37 (1.76)	20.02 (1.49)	19.50 (1.48)	19.91 (1.29)
Income (\$K)	46.9 (42.6) ^a	36.2 (21.4) ^a	79.2 (53.6) ^b	73.3 (48.2) ^b	60.5 (39.9) ^b	67.3 (52.2) ^b
Education	12.92 (2.61) ^a	13.08 (1.00) ^a	13.92 (1.68) ^b	14.01 (1.38) ^b	13.37 (1.15)	13.81 (1.05)
% with health conditions	3.8%	16.0%	19.2%	21.2%	21.1%	18.6%
% with sexual visits in 5 years	50.0%	76.0%	19.2%	66.7%	5.3%	48.8%
General medical visits in 5 years	18.17 (27.16)	13.60 (7.15)	11.20 (9.83)	12.42 (11.59)	11.97 (10.17)	13.78 (15.42)
% with psychological visits in 5 years	19.2%	8.0%	23.1%	24.2%	7.9%	7.0%
Medical avoidance	1.05 (.10)	1.12 (.37)	1.10 (.18)	1.14 (.30)	1.11 (.18)	1.13 (.16)
Trait embarrassment	83.11 (11.12) ^a	84.00 (11.92) ^a	77.24 (10.65)^b	79.20 (13.73)^b	—	—
Social desirability	.53 (.14)	.53 (.15)	.50 (.13)	.51 (.15)	—	—
Bodily embarrassment	1.82 (.63) ^a	2.01 (.95) ^a	2.07 (.82) ^b	2.51 (.88) ^b	2.25 (.67) ^c	2.90 (.89) ^c
Judgment concern	1.72 (.64)	1.66 (.67)	1.75 (.67)	1.72 (.64)	1.67 (.55)	1.87 (.50)

Note. Means in **bold** reflect East Coast Caucasian sample only (N = 25 white males and 25 white females). Means with different superscripts differ at $p < .05$ except in the case of Caucasian-Asian Bodily Embarrassment comparison ($p = .072$).

about feeling intellectually inadequate (items 8, 18, 36, 47), about being embarrassed by pain (items 9, 19, 28R, 37R) and about not taking care of one's health (items 10, 20, 29, 38R, 48, 53). Although the alphas for these scales were, with the exception of the pain embarrassment subscale, generally high (all α s greater than .70), we were concerned about the high intercorrelations among the subscales as well as the possibility that persons from different ethnic groups might use the scales differently (Chen, Lee, & Stevenson, 1995; Grimm & Church, 1999; Lee, Jones, Mineyama, & Zhang, 2002), or 'acquiesce' differentially (Johnson, Kulesa, Cho, & Shavitt, 2005). These considerations suggested that further analyses of the data structure were in order.

In examining the structure of the data in the two samples, we conducted two parallel principal components analyses with varimax rotation to ascertain the underlying data structure in the two samples (see Appendix). The analysis from the EC sample produced 12 factors with eigenvalues greater than 1, explaining 72.39% of the variance. Inspection of the scree plot suggested that a three-factor solution (46.56% variance explained) was the most readily interpretable. The first factor was defined by 22 items that accessed the emotional component of bodily embarrassment ($\alpha = .96$). The second factor comprised 18 items indexing concern about negative social judgment ($\alpha = .92$). The third factor was defined by seven items accessing comfort with medical examinations ($\alpha = .79$). The parallel analysis of the WC sample produced equivalent results for the bodily embarrassment and judgment concern factors, although the results were more mixed for the third factor. Specifically, the WC analysis also produced 12 factors with eigenvalues greater than 1, explaining 69.37% of the variance. The scree plot suggested that a three-factor solution (44.13% variance explained) was again the most readily interpretable. The first factor was defined by 22 items that accessed the emotional component of bodily embarrassment ($\alpha = .94$). The second factor comprised 15 items indexing concern about negative social judgment ($\alpha = .88$). The third factor was defined by three items accessing comfort with medical examinations ($\alpha = .55$).

As can be seen in Appendix, the loadings for the bodily embarrassment and concern about social judgment factors were generally equivalent across the two samples, although there were some minor differences; there was little consistency in the comfort factor. Owing to this consideration, we created aggregate variables for the bodily embarrassment and concern about social judgment factors by summing the items that loaded in the same way in each of the two samples. This resulted in a 'bodily embarrassment factor' defined by items 1, 2, 3, 11, 12, 13, 15, 23, 25, 30, 31, 32, 39, 40, 41, 44, 45, 50 and 51 (19 items; $\alpha = .96$) and a concern about social judgment factor defined by items 7, 9, 10, 14, 18, 20, 36, 42, 46, 47, 52 and 53 (12 items, $\alpha = .86$).

General medical behaviour

Owing to our interest in the relation between medical embarrassment and medical behaviour, we asked participants to report how frequently they visited a doctor, and record the number of times they had visited a series of physical and mental health specialists across the previous 5 years. Given the age of the sample, visit frequency data were skewed and were often better represented in terms of bimodal frequencies. Consequently, we created three conceptually meaningful groupings of visits that could potentially relate to embarrassment differently; a 'general visits' category, a 'psychological visits' category (psychologist and psychiatrist frequency) and

a 'sex-related' visits category (summed proctologist, urologist, venereologist, sexually transmitted disease (STD), planned parenthood/pregnancy and, for women, gynaecologist). These variables were skewed and were improved with a standard square root transformation (Tabachnick & Fidell, 2001).

Historical avoidance of medical situations because of embarrassment

In order to provide some initial validation of the medical embarrassment questionnaire, we asked participants 10 questions regarding historical avoidance of medical situations and symptoms as a result of embarrassment - avoidance of doctor, nurse, tests, worrying symptoms, urologists, anal/genital conditions, STD symptoms, gastrointestinal symptoms, psychological issues and sexual dysfunction. For each item, participants made ratings of either 0 (Not applicable), or between 1 (Never) and 4 (More than 3 times). As might be expected given the age of the sample, frequencies of avoidance were often very low and the resultant distributions were typically bimodal. To glean a general impression of historical avoidance, we summed the 10 items creating an aggregate avoidance score ($\alpha = .77$).

Dispositional embarrassability

To examine whether medical embarrassment was distinct from dispositional embarrassability characteristics, one of the samples (EC, $N = 102$) completed the 25-item Susceptibility to Embarrassment Scale (Kelly & Jones, 1997). Reliability studies have suggested the measure has strong internal consistency with α values between .92 (Kelly & Jones, 1997) and .96 (Maltby & Day, 2000), 8-week test-retest reliabilities around .65 (Kelly & Jones, 1997; Maltby & Day, 2000) and strong convergent relations with measures of anxiety and neuroticism (Kelly & Jones, 1997). Prior studies of the measure have suggested it is unidimensional (Maltby & Day, 2000), although a confirmatory factor analysis in the present sample suggested that three items did not load as expected. We aggregated the remaining 22 items to calculate a measure of dispositional embarrassment ($\alpha = .94$).

Social desirability

Since medical behaviour and medical embarrassment may represent socially desirable characteristics, one of the samples (EC, $N = 102$) completed the 33-item Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960). Internal consistencies for the aggregate measure are generally between .73 and .88 (Bardwell & Dimsdale, 2001) and the α was .70 in the current study.

Results

Overview

Consistent with our major aims, the data were analysed in three ways. First, we examined the characteristics of the samples as a function of sex and ethnic grouping. Second, we considered the zero-order relations between the two medical embarrassment factors - bodily embarrassment and judgment concern - and the measures of convergent validation. Finally, we investigated the multivariate relations between medical embarrassment and health behaviour correlates.

Ethnic differences in demographics, health and health behaviours

Since demographic factors and health are closely linked to health behaviours (Consedine, Magai, & Horton, 2005), we began our analyses by conducting descriptive sex by race MANOVAs and chi-square analyses to identify ethnic and sex differences in demographics, health and health behaviour characteristics. A MANOVA with age, household income, education and frequency of doctor's visits across the previous 5 years revealed significant effects for sex, Wilks' $\lambda = 2.43$, $p < .05$ and race, Wilks' $\lambda = 5.44$, $p < .01$. However, although follow-up ANOVAs showed significant racial differences in household income, $F(2, 244) = 9.90$, $p < .01$ and education, $F(2, 244) = 7.30$, $p < .01$, there were no significant sex effects at follow-up. *Post hoc* Games Howell tests showed income among Asians and Caucasians was greater than among African-Americans and that the level of education was greater among Caucasians than African-Americans. These variables were thus treated as covariates in the initial stages of the major predictive analyses.

Next, we compared the frequencies of participants from the three race and two sex groupings in terms of whether they reported the presence of major medical conditions, as well as whether they reported visiting (a) a psychologist/psychiatrist and (b) medical professional specializing in sexual behaviour during the previous 5 years. A chi-square found no sex/race differences in the frequency of major medical conditions, but it was significant for psychologist's visits, $\chi^2(5) = 10.88$, $p < .05$ and visits for matters relating to sexual behaviour, $\chi^2(5) = 61.14$, $p < .01$. Inspection of the standardized residuals (Hays, 1994) showed that psychological visits were marginally higher than would be expected by chance for Caucasian females ($z = 1.6$, $p = .055$, one tailed), and showed a trend towards being lower in both Asian men ($z = -1.3$, $p = .10$, one-tailed) and Asian women ($z = -1.5$, $p = .065$, one-tailed). For sexual visits, the standardized residuals showed lower frequencies among Caucasian ($z = -2.7$, $p < .01$) and Asian ($z = -3.6$, $p < .01$), but not African-American men. Frequencies differed significantly from chance for Caucasian ($z = 2.8$, $p < .01$) and African-American ($z = 2.5$, $p < .01$), but not Asian women.

Ethnic differences in medical avoidance, trait embarrassability, social desirability, bodily embarrassment and judgment concern

We began by considering differences in medical avoidance, bodily embarrassment and judgment concern. A sex by race MANCOVA controlling for income and education revealed significant effects for sex, Wilks' $\lambda = 6.69$, $p < .01$ and race, Wilks' $\lambda = 4.33$, $p < .01$, but no effects for income or education. A follow-up sex by race MANOVA also showed significant effects for race, Wilks' $\lambda = 4.21$, $p < .01$ and sex, Wilks' $\lambda = 6.86$, $p < .01$. Follow-up ANOVAs showed that bodily embarrassment, but not judgment concern, was greater among women, and that bodily embarrassment also varied by race. *Post hoc* Games Howell tests showed that bodily embarrassment was lower among African-Americans than either of the other two racial groups; bodily embarrassment was marginally greater among Asians versus Caucasians ($p = .072$).

Finally, we tested for differences in social desirability and trait embarrassability between the Caucasian and African-American EC sample groups. A sex by race MANCOVA, controlling for income and education, showed a significant race effect, Wilks' $\lambda = 3.42$, $p < .05$, but no effects for either income or education. A follow-up sex by race MANOVA also showed a significant effect for race, Wilks' $\lambda = 3.24$, $p < .05$, and

the follow-up ANOVA showed that this was due to higher trait embarrassability among African-Americans, $F(1, 97) = 5.06, p < .05$.

Intercorrelations among the study variables

In order to examine the convergent validity of the medical embarrassment questionnaire, and the interrelations among the study variables, we conducted Pearson product moment correlations. Table 2 displays the pattern of results. As expected, judgment concern was negatively associated with age, but positively related to medical avoidance, and trait embarrassability. For its part, bodily embarrassment was positively associated with being female, with medical avoidance and trait embarrassability; the two medical embarrassment factors were themselves positively correlated. Although the relation between trait embarrassability and medical embarrassment was expected, it is important to note that both medical embarrassment factors predicted historical avoidance of medical settings due to embarrassment ($r_s = .33, .36$) more strongly than trait embarrassability ($r = .24$).

In terms of predicting the frequency of medical behaviour, the data were complex. Greater bodily embarrassment and judgment concern predicted a lower frequency of sex-related medical visits while trait embarrassability did not. Highlighting the complexity of medical embarrassment, however, greater judgment concern predicted *more* frequent psychological visits while bodily embarrassment did not. Finally, it is worth noting that the presence of major health conditions predicted avoidance, as well as more frequent general and psychological medical contacts; we consider the role of health conditions in health behaviour more fully below.

Predicting the frequency of sexual, general and psychological health visits

Our final interest lay in determining whether, and how, the two medical embarrassment factors predicted self-reported psychological, sexual and general health contacts. To test these relations, we ran three parallel 2 (Sex) \times 2 (Bodily Embarrassment) \times 2 (Judgment Concern) ANCOVAs (one per health domain) in which participant sex, together with dichotomized bodily embarrassment and judgment concern served as factors, and race, household income and the presence of health conditions requiring medical treatment served as covariates. For each model, significant covariates other than health were then dichotomized and added to a follow-up ANOVA. However, because the frequency of chronic health conditions was understandably low in our student samples (resulting in unworkable cell sizes), where health was significant it was retained as a covariate in a subsequent ANCOVA.

Frequency of psychological visits

The psychological visits ANCOVA showed effects for both race, $F(1, 243) = 11.09, p < .01$ and the presence of a condition requiring treatment, $F(1, 243) = 23.83, p < .01$. As per our general strategy, we added race to a follow-up 2 (Sex) \times 2 (Bodily Embarrassment) \times 2 (Judgment Concern) ANCOVA in which health status was retained as a covariate. The follow-up model likewise showed a marginally significant effect for race, $F(1, 237) = 2.92, p = .056$ and health status, $F(1, 237) = 14.11, p < .01$; in contrast to the zero-order effect (see Table 2), there was no effect for judgment concern or bodily embarrassment on psychological visit frequency.

Table 2. Zero-order correlations among key study variables

Variables	Age 1	Sex 2	Inc. 3	Educ. 4	Avoid 5	HB Sex 6	HB Gen 7	HB Psysc 8	SES 9	SD 10	H 11	Bodies 12	Judge 13
1. Age	—	-.07	-.00	.59**	.03	.17**	-.05	.11	-.05	-.18	-.01	-.09	-.16**
2. Sex		—	.01	.08	.09	.27**	.00	.04	.06	.03	.06	.27**	.03
3. Income (Inc.)			—	-.02	-.06	-.06	-.10	.03	.09	-.15	.01	.04	-.02
4. Education (Educ.)				—	.08	.09	-.01	.19**	-.06	.06	.12*	.01	-.08
5. Medical avoidance					—	-.03	.12	.15*	.24**	-.10	.20**	.33**	.36**
6. Health behaviour (sexual)						—	.23**	.09	-.09	.04	.00	-.23**	-.20**
7. Health behaviour (general)							—	.16**	-.03	.17	.27**	-.05	.06
8. Health behaviour (psychological)								—	.14	.11	.26**	.01	.14*
9. Trait embarrassment									—	-.15	.09	.21*	.19*
10. Social desirability										—	.04	-.13	-.03
11. Health conditions											—	.01	.08
12. Bodily embarrassment												—	.58**
13. Judgment concern													—

Note. * $p < .05$, ** $p < .01$; sex is coded such that 0 = male, 1 = female; coefficients in **bold** reflect East Coast sample only ($N = 101$); all others with both East and West Coast samples ($N = 250$).

Frequency of sex-related visits

The sex visits model showed effects for bodily embarrassment, $F(1, 243) = 8.25$, $p < .01$, sex, $F(1, 243) = 49.63$, $p < .01$ and a marginal effect for judgment concern, $F(1, 243) = 3.70$, $p = .055$. After dropping the non-significant covariates, the follow-up ANOVA remained significant for bodily embarrassment, $F(1, 242) = 10.82$, $p < .01$ and sex, $F(1, 242) = 44.71$, $p < .01$, although judgment concern was no longer significant. Frequency of sexual visits was higher among women and persons with lower bodily embarrassment. However, the main effect for bodily embarrassment was qualified by interactions with judgment concern, $F(1, 242) = 5.23$, $p < .05$ and, marginally, with sex, $F(1, 242) = 3.35$, $p = .068$. The bodily embarrassment by sex effect suggested that embarrassment made *more difference* to women's frequency of sexual visits, while the bodily embarrassment by judgment concern interaction suggested that low judgment concern might 'offset' the negative effect of bodily embarrassment on visit frequency (see left panel Figure 1).

Frequency of general visits

The general visits model showed an effect for bodily embarrassment, $F(1, 243) = 8.10$, $p < .01$, and there was a significant effect for the presence of health conditions requiring treatment, $F(1, 243) = 39.39$, $p < .01$, in which participants reporting a condition reported greater general visit frequency. However, while there may well be differences in the effects of bodily embarrassment and judgment concern on health behaviour between persons with and without conditions requiring medical treatment, the low frequency of chronic conditions requiring regular treatment in our student samples (see Table 1) precluded adding health condition as a factor. Instead, we conducted a 2 (Sex) \times 2 (Bodily Embarrassment) \times 2 (Judgment Concern) ANCOVA in which the effect of health status was covaried. The follow-up model likewise showed a significant effect for health status, $F(1, 241) = 38.43$, $p < .01$, as well as an effect for bodily embarrassment, $F(1, 241) = 8.91$, $p < .01$, and a marginal interaction between bodily embarrassment and judgment concern, $F(1, 241) = 3.39$, $p = .067$. As with the sexual visits model, greater bodily embarrassment predicted less frequent general visits and those with a health condition visited more frequently. Inspection of the marginal

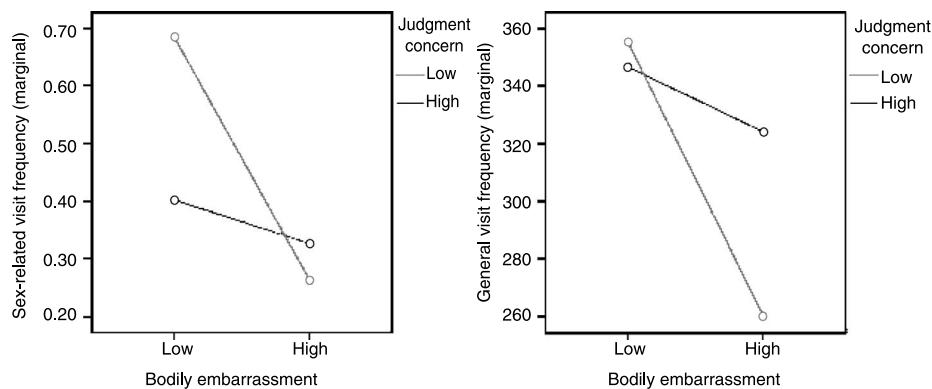


Figure 1. Interaction between level of bodily embarrassment and judgment concern for frequency of sex-related visits (left panel) and general visits (right panel).

interaction between bodily embarrassment and judgment concern suggested that although high bodily embarrassment was generally associated with lower general visit frequency, this effect was 'offset' where judgment concern was high; judgment concern made no difference at low levels of bodily embarrassment (see right panel Figure 1).

Discussion

If anything, the current data demonstrate that medical embarrassment – properly measured – is not a unitary phenomenon and that it may not be useful to think of embarrassment as acting exclusively as a barrier to health behaviour. Instead, our data suggest that medical embarrassment has at least two distinct aspects – bodily embarrassment and judgment concern – each of which may relate differentially to health behaviour outcomes both alone and in interaction. As expected, levels of bodily embarrassment were negatively related to the frequency of sex-related and general health visits; persons reporting greater bodily embarrassment reported lower frequencies of sex-related and general health visits, even when controlling for the presence of chronic conditions. Conversely, however, and although primarily in zero-order relations, while concern about the negative judgment of others was negatively related to sex-related visits, it was positively related to the frequency of psychological visits, and did not relate to general visit frequency. Below, we discuss these findings more fully, concentrating on the psychometric properties of the medical embarrassment instrument, the distinction between the bodily embarrassment and judgment concern as distinct aspects of embarrassment, and the implications different aspects of medical embarrassment may have for the understanding of health behaviour.

Measuring medical embarrassment among men and women from diverse groups

Discussions of the role of medical embarrassment in health behaviour are predicated on researchers having instruments that capacitate a valid and differentiated means by which to measure the phenomenon. However, although embarrassment is theoretically complex, quantitative studies of embarrassment in health research have used single-item measures in the absence of convergent validation data (Consedine, Magai, & Neugut, 2004; Farraye *et al.*, 2004; Hagglund *et al.*, 2003; Kinchen *et al.*, 2003a; Roberts *et al.*, 1994). A major aim of the current study was to provide preliminary reliability and validity data for a differentiated measure of medical embarrassment. Proceeding from the assumption that the 'target' of an emotional response is critical to understanding how it will impact behaviour (Consedine, Magai, Krivoshekova *et al.*, 2004), the 53-item measure presented in the current study attended to a range of situational, interpersonal and intra-personal characteristics that previous research has suggested may generate medical embarrassment, including the presence of other people (Shaw *et al.*, 2000), a fear of awkward interaction (Parrott *et al.*, 1988), genital touching (Gascoigne *et al.*, 1999), a lack of privacy (Shaw *et al.*, 2000) and concerns regarding appearing to be a hypochondriac (Gascoigne *et al.*, 1999).

Although our initial reading of the extant embarrassment literature led us to target nine possible aspects or sources of medical embarrassment, factor analyses of the data from our student samples suggested the presence of two factors that were robust across analyses for EC and WC samples. Consistent with descriptions of embarrassment as a distinct experiential state (Edelmann, 1985; Keltner & Anderson, 2000; Miller, 1992),

the first factor was defined by 19 items indexing experiences of feeling uncomfortable or conflicted about the body and with feeling humiliated, shy, embarrassed or awkward when naked or being examined. Conceptually, this element of medical embarrassment was distinguished from a second, more cognitive, factor defined by 12 items that appeared to tap concerns about negative social evaluations or judgment (Manstead & Semin, 1981; Miller, 1996; Modigliani, 1971).

Psychometrically, both factors were highly reliable with both alphas exceeding .85. Although the two factors were correlated with one another, the bodily embarrassment and judgment concern factors showed a pattern of correlations with other demographic and psychological measures that supported their validity and distinction. Both factors were positively correlated with a measure of dispositional embarrassability (Kelly & Jones, 1997), albeit moderately, and both were positively associated with reports of previous avoidance of medical settings owing to embarrassment.

In terms of discriminative prediction, the relations between the two factors and demographic characteristics supported the distinction as well as our predictions. Consistent with expectations derived from previous research examining sex differences in bodily satisfaction (McCabe & Ricciardelli, 2004; Wichstrom, 1999) and embarrassment (Bögels *et al.*, 1996; Farraye *et al.*, 2004; Miller, 1992, 1995), bodily embarrassment, but not judgment concern, was greater among young women. This finding extends previous research in two ways. First, it more clearly specifies the content of the normative gender difference in embarrassment, showing that although young women are no more concerned about negative social judgment, they report greater bodily embarrassment. Given that it is this particular component of embarrassment that appears to act as a deterrent to health behaviour and its effect appears to be greater among women (below), this finding is clearly a cause for concern.

Previous examinations of race differences in embarrassment are few. A few studies suggest that embarrassment is lower among older African-American women (Consedine, Magai, & Neugut, 2004), possibly higher in African-American men (Barber *et al.*, 1998), and that it may be greater among Asian groups (Singelis *et al.*, 1999; Singelis & Sharkey, 1995). As expected, we found that Asian participants reported significantly more bodily embarrassment compared with African-American participants, marginally more than European-Americans ($p = .072$), and that reports of bodily embarrassment were higher among European-Americans than in African-Americans. As with the findings regarding gender, however, levels of concern regarding negative social judgments were not associated with race, perhaps indicating that judgment concerns are comparatively consistent among young adults from different racial groups.

Bodily embarrassment, judgment concern and medical visit frequency

Previous research examining the relations between medical embarrassment and participation in intimate medical procedures has near universally concluded that actual or anticipated embarrassment acts as a barrier to health behaviour (Bobo *et al.*, 1999; Consedine, Magai, & Neugut, 2004; Crump *et al.*, 2000; Farraye *et al.*, 2004; Gascoigne *et al.*, 1999; Goldman & Risica, 2004; Hagglund *et al.*, 2003; Harewood *et al.*, 2002; Horrocks *et al.*, 2004; Kinchen *et al.*, 2003; Rawl *et al.*, 2000; Shaw *et al.*, 2000; Taylor *et al.*, 2002; Thompson *et al.*, 1997). However, the current study suggests that this conclusion may only be reached when 'embarrassment' is measured in an undifferentiated fashion. Specifically, while the 'bodily embarrassment' element of medical embarrassment appeared to deter involvement in examination procedures

when examined in isolation, concerns regarding negative social evaluation related to behaviour somewhat differently. Further highlighting the complexity of embarrassment, the two aspects interacted in some instances and there was a clear suggestion that the relations between embarrassment and behaviour may vary across domains of medical examination.

In terms of domain, the current study assessed the self-reported frequency of participation of two samples of students in three domains - sex-related visits, general medical visits and psychological visits. The assessment of multiple, broad-level health behaviour domains, together with an extension of medical embarrassment research to student samples, stands in contrast to previous research that has examined the role of embarrassment in highly specific screenings or appointment types, primarily among late middle age or older adults. However, consistent with the suggestion that embarrassment may act as a barrier to participation in intimate examinations (Shaw *et al.*, 2000; Shinn *et al.*, 2004), our analyses found that greater bodily embarrassment was associated with fewer sexual and general (although not psychological) visits. The fact that greater bodily embarrassment predicted less frequent sexual visits is not surprising given the intimacy and vulnerability that is often required of the patient in these settings, although our data do suggest that this effect may be greater among women ($p = .068$).

Greater bodily embarrassment also appeared to act as a barrier to participation in general medical visits. This is important, for in many situations and under many health coverage plans, the PCP is the first point of contact for patients with symptoms and speaks to the pervasiveness of bodily embarrassment's effects in promoting the avoidance of medical settings requiring physical examination; bodily embarrassment did not predict psychological visit frequency which was better predicted by judgment concern, at least in zero-order relations. Our suspicion in this regard is that higher judgment concern may either promote greater psychological distress, or that the measure may index greater neuroticism; persons with greater neuroticism are more likely to receive mental health care whether or not they have an emotional disorder (ten Have, Oldehinkel, Vollebergh, & Ormel, 2005).

Although this pattern may suggest that only the 'bodily embarrassment' component of medical embarrassment is relevant to medical avoidance, several other findings suggest that such a conclusion would be premature. In the sex visits model, and marginally in the general visits model ($p = .067$), the effect of bodily embarrassment on medical behaviour varied depending on levels of judgment concern. Examination of the interaction plot in the case of general visits suggested that greater concern about negative social judgment may 'offset' the generally negative impact of bodily embarrassment among those with high bodily embarrassment, perhaps by activating competing motivations regarding adherence to social norms (Keltner & Anderson, 2000) regarding medical treatment seeking. Conversely, however, inspection of the interaction for sexual visit frequency suggested that concerns regarding negative social evaluations may act as a *further deterrent* to participation, at least among those reporting low bodily embarrassment.

In considering this finding somewhat further, it is worth noting that greater judgment concern only acted to offset bodily embarrassment when considered in the context of general visits and was, in fact, better described as an additional barrier to the frequency of sex visits. This combination of findings may suggest that it is the extent to which the 'target' behaviour increases or decreases the discrepancy between self-presentation and the social standard for self-presentation (Edelmann, 1985) that determines whether judgment concern acts as a barrier or a facilitator of treatment seeking. In the context of

sexual visits and issues (e.g. pregnancies, STD symptoms, birth control), for example, it may be that visits create or exaggerate an awareness of the discrepancy between self-presentation (e.g. 'I have an STD') and the social standard (e.g. 'I should not be sexually active/should not have an STD'). Since the treatment-seeking behaviour is seen as being likely to increase discrepancy and *thus* promote psychological discomfort, the situation is avoided and both discrepancy and discomfort are reduced. Complimentarily, in more general medical settings, the discrepancy between self-presentation (e.g. 'I am/am not attending to my health') and the standard for self-presentation (e.g. 'I should attend to my health') is minimized by treatment seeking and thus judgment concern acts to offset other components of embarrassment. Further studies that illuminate the conditions under which concern over negative social judgment will, and will not, encourage treatment seeking and clearly operationalize the discrepancy between self-presentation and the social standards for self-presentation are critically needed.

Limitations and concluding remarks

Although they represent an important contribution to the understanding of how aspects of medical embarrassment may both facilitate and prevent the seeking of medical contacts, the current data are limited in some important regards. First, although recruiting from two independent sites gave us access to a more diverse participant base, practical considerations necessitated minor differences in the means of recruitment and reward for participation in each of the two samples; this may have contributed to differences across the samples. More importantly, our measures of the key outcome variables – frequency of general, psychological and sex-related visits – were self-reported and are thus subject to the demand characteristics and biases inherent to this form of measurement. Chart audits are one possible solution to this problem, although it seems likely that requiring permission to access charts will differentially deter dispositionally more embarrassable individuals and that such persons may be less forthcoming with their symptoms when charts are being recorded.

Students also differ from other groups in their typical source of medical care (i.e. university clinics rather than family practitioners), and in that they are typically a high socio-economic and education-level sample. Although education and income were not related to embarrassment in this sample, this may reflect a constricted range, as previous work has shown that embarrassment may vary with education (Consedine, Magai, & Neugut, 2004) and, in any case, these socio-demographic variables are important determinants of health access and behaviour (Roberts *et al.*, 1994). Most generally, we must be careful in assuming that these data will generalize to individuals from other stages of the life-span. Greater age might be expected to produce lower mean *levels* of medical embarrassment as people become accustomed to medical contexts, although the possibility that developmental variation in medical embarrassment's *underlying structure* should also be explored.¹

These limitations noted, our data nonetheless suggest that medical embarrassment is a more complex phenomenon than is typically supposed. Operationalized in two parts – in terms of bodily embarrassment and judgment concerns – our study suggests that while medical embarrassment is frequently a barrier to health behaviour in young adults, the relations between embarrassment and health behaviour are complex. In continuing

¹ We are grateful to the Editor for this intriguing suggestion.

to extend current understanding of how psychological characteristics relate to health behaviour, our data can be interpreted as suggesting that powerfully motivating emotions such as fear/anxiety and embarrassment promote the avoidance of medical care seeking primarily in situations where the avoidance reduces the likelihood of an aversive emotional experience (Consedine, Magai, Krivoshekova *et al.*, 2004) and/or reduces the discrepancy between self-presentation and social standards for self-presentation. Conversely, the emotions theory driven approach to embarrassment presented here also suggests that where avoidance is *creating* or *maintaining* embarrassment, as may be the case where health symptoms, such as incontinence (Roberts *et al.*, 1994) or dental issues (Moore *et al.*, 2004) are evident to others, participation in treatments that act to reduce embarrassment should become more appealing and frequent.

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Appendix

Item loadings based principal components analysis with varimax rotation for Medical Embarrassment Questionnaire in two student samples

Item	Loadings: East Coast sample			Loadings: West Coast sample		
	Bodily	Judge	Comfort	Bodily	Judge	Comfort
1	+			+		
2	+			+		
3	+			+		
4		+				
5						
6						
7		+			+	
8					+	
9		+			+	
10		+			+	
11	+			+		
12	+			+		
13	+			+		

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Appendix (Continued)

Item	Loadings: East Coast sample			Loadings: West Coast sample		
	Bodily	Judge	Comfort	Bodily	Judge	Comfort
14		+			+	
15	+			+		
16		+				
17						
18		+			+	
19		+				
20		+			+	
21			+	-		
22			+	-		
23	+			+		
24			+			+
25	+			+		
26		+				
27						
28						+
29	+					
30	+			+		

Appendix (Continued)

Item	Loadings: East Coast sample			Loadings: West Coast sample		
	Bodily	Judge	Comfort	Bodily	Judge	Comfort
31						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						
45						
46						

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Appendix (Continued)

Item	Loadings: East Coast sample			Loadings: West Coast sample		
	Bodily	Judge	Comfort	Bodily	Judge	Comfort
47		+			+	
48					+	
49			+	-		
50	+			+		
51	+			+		
52		+			+	
53		+			+	

Note. Items loading on the three factors at .500 in either sample are indicated with a '+'. However, only items that loaded at .500 or above in both samples were used in final scales. 'Comfort' scale not used.