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University of Windsor

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EXAMINING THE EFFECTS OF GENDER-RELATED TRAITS AND MULTIPLE
ROLE STRAIN AMONG WOMEN WITH IRRITABLE BOWEL SYNDROME

by

Sabrina Concetta Voci

A Thesis
Submitted to the Faculty of Graduate Studies
through the Department of Psychology
in Partial Fulfillment of the Requirements for
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ABSTRACT

The relationship of socially desirable and socially undesirable agentic (desirable agency, unmitigated agency, lack of agency) and communal (desirable communion, unmitigated communion, lack of communion) traits with quality of life and psychological adjustment was examined among a sample of women with irritable bowel syndrome. Participants were 87 women who met Rome III criteria for IBS. Findings indicated that desirable agency was associated with higher quality of life and greater psychological adjustment and unmitigated agency was related to lower quality of life and poorer psychological adjustment. Both unmitigated communion and lack of agency were associated with poorer psychological adjustment. Desirable communion and lack of communion were not associated with outcome variables. Perceived stress mediated relationships on outcome variables for both desirable agency and unmitigated communion. Findings highlight the importance of studying socially desirable and undesirable traits related to both masculine and feminine gender roles among female medical populations.

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EXAMINING THE EFFECTS OF GENDER-RELATED TRAITS AND MULTIPLE ROLE STRAIN AMONG WOMEN WITH IRRITABLE BOWEL SYNDROME

It is well known that women live longer than men (Statistics Canada, 2006). It seems paradoxical, therefore, to learn that whereas men experience increased rates of mortality compared to women, women across all age groups experience increased rates of morbidity (illness and disease) (Statistics Canada, 2006). Whereas men are more likely to be diagnosed with life-threatening conditions, women are more likely to suffer from non-fatal chronic health conditions, acute conditions, and are more likely than men to take days off work due to illness, see health care professionals, take medication, and assess themselves as more sick (Bird & Rieker, 1999; Lorber & Moore, 2002). One social determinant of health believed to be implicated in these health disparities are gender roles (Spitzer, 2005). *Gender roles* refer to the set of attitudes, characteristics, and behaviors that are socially defined as appropriate for each sex, acquired during development through differential socialization of boys and girls by parents, teachers, and societal institutions (Lips, 2005).

One of the pathways by which gender roles exert an impact on health is through the development of personality traits linked with masculine and feminine gender roles. *Agency* and *communion* are gender-related personality traits which are associated with a variety of outcomes related to health and well-being. In particular, agency refers to a focus on oneself and autonomy and communion refers to a focus on others and relationships (Helgeson, 1994). Agency is linked with the masculine gender role and is therefore typically higher among men, whereas communion is linked with the feminine gender role and is typically higher among women (Helgeson & Fritz, 1999). Agency and

communion have been found to be adaptive for both men and women and are both related to positive outcomes. However, these traits are considered maladaptive when they are either present at extreme levels, referred to as *unmitigated communion* and *unmitigated agency*, or conversely when they are absent or lacking, referred to as *lack of communion* and *lack of agency* (see Appendix A).

One health condition for which it has been suggested that gender roles play a part is irritable bowel syndrome, a functional gastrointestinal disorder that is characterized primarily by abdominal pain and altered bowel habits, for which no organic cause or origin can be identified. Irritable bowel syndrome is more prevalent among women (Saito, Schoenfeld, & Locke, 2002). Based on clinical experience with female IBS patients, Toner and colleagues (Toner & Akman, 2000; Toner, Segal, Emmott, & Myran, 2000) suggest that personality characteristics traditionally associated with femininity have significant implications for the expression and maintenance of IBS symptoms in women. These characteristics include being nurturing toward others but not oneself, a lack of assertiveness, and trying to please others. Despite this hypothesis, there has only been a limited exploration of how gender-related personality traits effect outcomes among women with IBS. In particular, the impact of gender-related traits associated with femininity that are maladaptive (e.g., unmitigated communion) have not been examined among this population.

The primary objective of the current study was to examine the relationship of gender-related traits with quality of life and psychological adjustment among a sample of women with IBS. A secondary objective was to determine whether the strain associated

with filling multiple roles (i.e., employee, mother, spouse, caregiver) mediates the relationship between unmitigated communion and negative outcomes.

Agency and Communion

Bakan (1966) originally adopted the terms *agency* and *communion* to reflect what he proposed were two fundamental modalities of human existence. Broadly speaking, he suggested agency represents one's existence as an individual, and communion represents an individual's participation in a larger organism of which the individual is a part. Agency manifests itself in self-protection, self-assertion, social isolation, and the desire for mastery and power. Communion manifests itself in contact, openness, attachment, cooperation and a sense of being at one with other organisms. Bakan (1966) also asserted that whereas agency and communion are present in both men and women, agency is more characteristic of men and communion is more characteristic of women.

More recent conceptualizations (Helgeson, 1994) view agency and communion as broad metaconstructs, each comprised of groups of personality traits which are associated with masculine and feminine gender roles. Agency and communion have traditionally been measured with one of two measures, the Personal Attributes Questionnaire (PAQ; Spence, Helmreich, & Stapp, 1974) or the Bem Sex Role Inventory (BSRI; Bem, 1974). Both of these measures were originally developed to measure masculinity and femininity, and the degree to which one endorsed possessing agentic versus communal traits indicated their gender role orientation as either masculine or feminine. However, researchers now believe that masculinity and femininity are context-dependent, multidimensional constructs and that the BSRI and PAQ are personality trait measures which capture only one component of these constructs (Marsh, 1987; Spence, 1983,

1984). Groups of traits that reflect agency and communion have also referred to alternatively as instrumentality and expressivity, task-orientation and person-orientation, or dominance and nurturance. I will use the terms agency and communion when reviewing empirical findings and theory which are now understood as representing these gender-related personality traits.

Gender-Related Trait Theory

Unidimensional and Bidimensional Theories. Initial unidimensional theories suggested that agentic and communal traits occupied opposite ends of a single masculinity-femininity continuum. Sex-typed individuals, that is, females who endorse communal traits and males who endorse agentic traits, were believed to exhibit more psychological and social adjustment compared to individuals whose behaviour and psychological attributes deviated from what was expected of their sex (Spence, 1984).

During the 1970s, researchers (Constantinople, 1973) began to question unidimensional models and their underlying assumptions. As a result, unidimensional models were replaced with bidimensional models (Bem, 1974; Spence, Helmreich & Stapp, 1975), which proposed that agency and communion are independent constructs and that each contributes positively to adaptive functioning among both men and women. A large body of research has found significant main effects for both agency and communion on a variety of dependent variables, supporting the assertion that both agency and communion contribute to distinct positive outcomes (Cook, 1985).

Bidimensional theories also introduced the concept of androgyny, a term used to refer to individuals who possess both agentic and communal traits (Bem, 1974). Different models specify the way in which agency and communion together produce the

characteristics of androgyny (Cook, 1985). A balance model of androgyny specifies that androgyny consists of equal parts or a balance between agency and communion.

According to this view, agency and communion are extreme tendencies on their own, without the presence of the other. When present jointly, however, each dimension tends to moderate the influence of the other, or in Bakan's (1966) terms, mitigates the other (Cook, 1985).

An additive model of androgyny (Spence, et al., 1975) asserts that androgyny is characterized by a high degree of both agency and communion. These models are additive in that they assume outcomes reflect the sum of agency and communion (Cook, 1985). Using median splits on measures of agency and communion, individuals are grouped into four categories. Thus, individuals who are non-sex-typed and *high* on both agency and communion (androgynous) are distinguished from those who are non-sex-typed but *low* on both agency and communion (undifferentiated). Substantial support exists for the additive model, demonstrating that androgynous individuals experience better outcomes in many areas compared to both undifferentiated and sex-typed individuals (Cook, 1985).

Finally, a multiplicative or interactive model of androgyny asserts that the combination of agency and communion produces unique consequences and these 'emergent properties' cannot be predicted from levels of agency and communion alone (Cook, 1985).

Differentiated Multidimensional Gender Role Model. By the 1980s, investigators (Marsh, 1987; Spence, 1983, 1984) began to propose that agency and communion were context-dependent, multidimensional constructs, giving rise eventually to more complex

multidimensional models such as the differentiated multidimensional gender role model (Korabik, 1999; Korabik & McCreary, 2000; McCreary & Korabik, 1994). Researchers also began to realize that most research had focused on socially desirable aspects of agency and communion, with a lack of attention on socially *undesirable* gender-related traits (Korabik, 1999). The differentiated multidimensional gender role model addresses this limitation by incorporating both socially desirable and undesirable traits (see Figure 1). The differentiated multidimensional gender role model specifies two ways that gender-related traits can be considered socially undesirable, through gender role *oversocialization* and gender role *undersocialization*, whereby either too much or too little agency or communion can be undesirable or maladaptive.

The differentiated multidimensional gender role model (Korabik, 1999; Korabik & McCreary, 2000; McCreary & Korabik, 1994) builds on Marsh's (1987) differentiated additive androgyny model by predicting that different gender-related traits will predict different and unique outcomes. Marsh proposed and found evidence (Marsh, 1987; Marsh & Byrne, 1991) that agency and communion are each associated with differential outcomes, with agency more predictive of outcomes in the task-oriented domain and communion more predictive of outcomes in the relationship-oriented domain. Therefore the benefits of agency and communion are dependent on the type of outcome being investigated, and each trait is adaptive for different tasks rather than being associated with adjustment in general.

The gender role oversocialization component of the differentiated multidimensional gender role model is based on the notion that socially desirable agency and communion can be excessive if not balanced by characteristics from the other

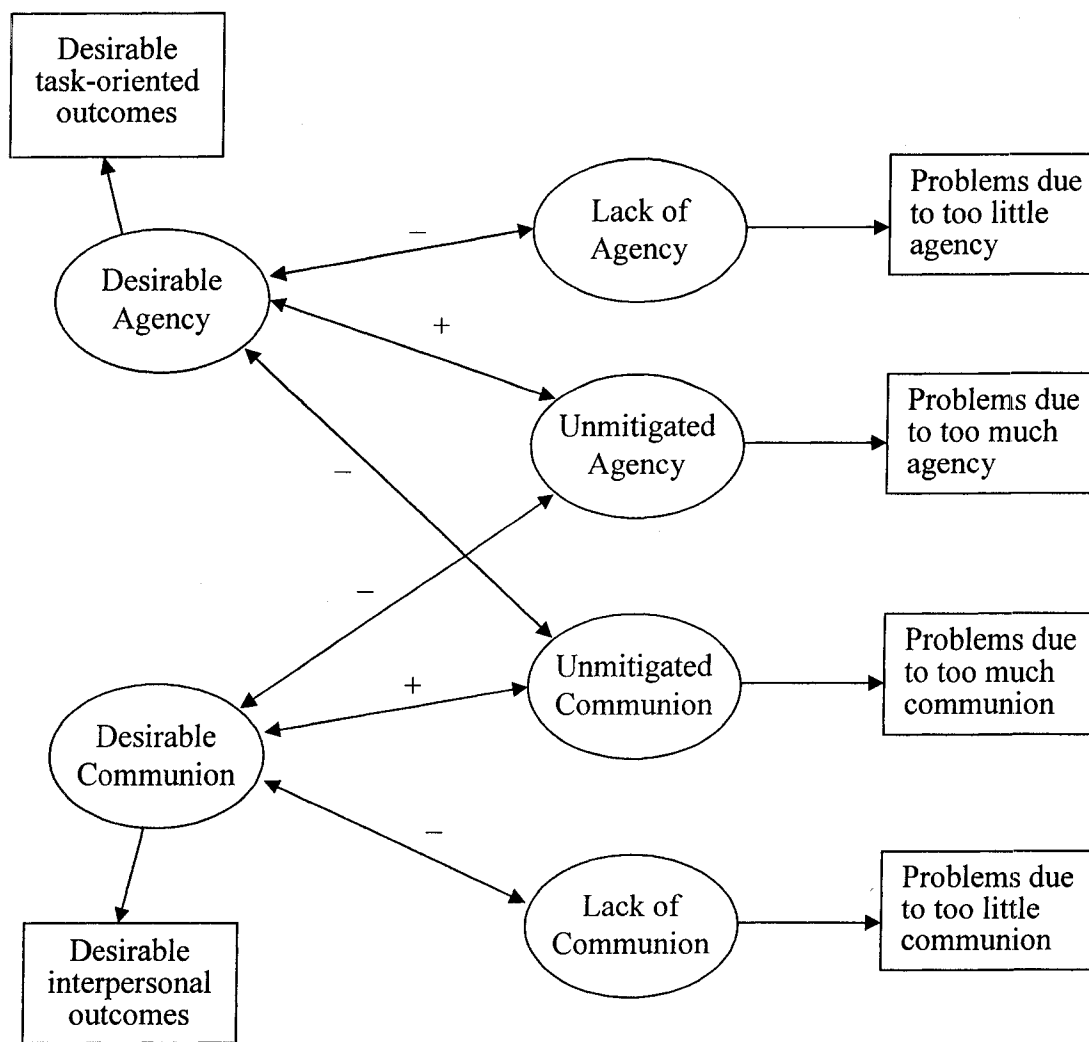


Figure 1. Differentiated Multidimensional Gender Role Model (Korabik, 1999; Korabik & McCreary, 2000; McCreary & Korabik, 1994).

domain. Extreme levels of agency or communion, combined with too little of the other gender-related trait domain, are referred to as *unmitigated agency* or *unmitigated communion*, respectively. Unmitigated agency was originally conceptualized by Bakan (1966), who believed that being too agentic (i.e., self-oriented), unmitigated by a sense of communion (i.e., other-oriented), is harmful for both the individual and society in general. Spence, Helmreich, and Holahan (1979) extended Bakan's concept of unmitigated agency to the notion of unmitigated communion by proposing that some degree of agency is necessary to mitigate against being overly communal. Therefore, individuals high in unmitigated agency or unmitigated communion are conceptualized as: (1) having adopted agentic and communal traits to an extreme, and (2) having failed to adopt traits from the other gender role domain (Helgeson, 1994; Korabik & McCreary, 2000).

Helgeson and Fritz (1999) have argued for the importance of making the distinction between desirable communion versus unmitigated communion and desirable agency versus unmitigated agency. They argue that unmitigated communion is not simply a high degree of communion combined with low agency and likewise unmitigated agency is not merely a high degree of agency combined with low communion. For example, whereas communion includes being warm, helpful, and sensitive toward others, individuals characterized by unmitigated communion demonstrate an excessive concern with others to such an extent that they place others' needs before their own (Fritz & Helgeson, 1998). Fritz and Helgeson (1998) believe that people high in unmitigated communion have a poor self-regard and turn to their social environment for self-esteem, which leads to a focus on others at the expense of the self. They suggest that the two sets

of characteristics that distinguish unmitigated communion from desirable communion are: (1) overinvolvement with others, and (2) self-neglect (Fritz & Helgeson, 1998).

Likewise, whereas agency is characterized by traits such as independence and confidence, a person who scores high on unmitigated agency is characterized by traits such as being hostile, arrogant, and egotistical, reflecting both self-absorption and a negative view of others (Helgeson & Fritz, 2000). This distinction is particularly important to make because only the unmitigated traits are associated with negative psychological and physical health outcomes. Thus, unmitigated communion and unmitigated agency are seen as qualitatively different from their desirable counterparts and are associated with distinct outcomes (Helgeson, 1994).

With respect to the empirical inter-relationships among gender-related traits, the oversocialization component of the theory predicts that unmitigated agency should be negatively correlated with desirable communion, and unmitigated communion should be negatively correlated with desirable agency (Korabik & McCreary, 2000). The differentiated multidimensional gender role model also predicts that the correlations between unmitigated agency and desirable agency should be positive but low, as should the correlations between unmitigated communion and desirable communion. Evidence exists to support the above predictions, suggesting that unmitigated agency and unmitigated communion are in fact distinct from socially desirable agency and communion, respectively (Korabik & McCreary, 2000).

The gender role undersocialization component of the differentiated multidimensional gender role model is based on the premise that some individuals do not develop traits associated with agency or communion and, instead, develop opposing traits

that reflect a *lack* of agency or communion (Korabik, 1999; Korabik & McCreary, 2000; McCreary & Korabik, 1994). According to the differentiated multidimensional gender role model, the relationships between desirable agency, lack of agency, desirable communion and lack of communion are conceptually represented using Wiggins' interpersonal circumplex (Wiggins, 1979, 1988). The interpersonal circumplex is a two-dimensional representation of interpersonal traits organized along two dimensions or axes, dominance and nurturance (see Figure 2). The nurturance axis consists of warm-agreeable traits (e.g., kind, sympathetic) at one pole, which are considered conceptually equivalent to communion, and at the opposite end are cold-hearted traits (e.g., unsympathetic, warmthless) which reflect a lack of communion. Similarly, the dominance axis consists of assured-dominant traits (e.g., assertive, self-confident) at one pole, considered conceptually equivalent to agency, and unassured-submissive traits (e.g., unauthoritative, meek) at the opposite end which represent a lack of agency. Research has found that agency and communion as assessed using the EPAQ (Spence et al., 1979) do correspond with the dominance and nurturance axes in the trait circumplex, respectively (Ghaed & Gallo, 2006; Korabik & McCreary, 2000), supporting the assertion that these two dimensions reflect agency and communion.

The undersocialization component of the model predicts and evidence supports the independence of agency from communion, the independence of lack of agency from lack of communion, as well as bipolar relationships between desirable agency and lack of agency and between desirable communion and lack of communion (McCreary & Korabik, 1994; Korabik & McCreary, 2000).

In sum, according to the differentiated multidimensional gender role model

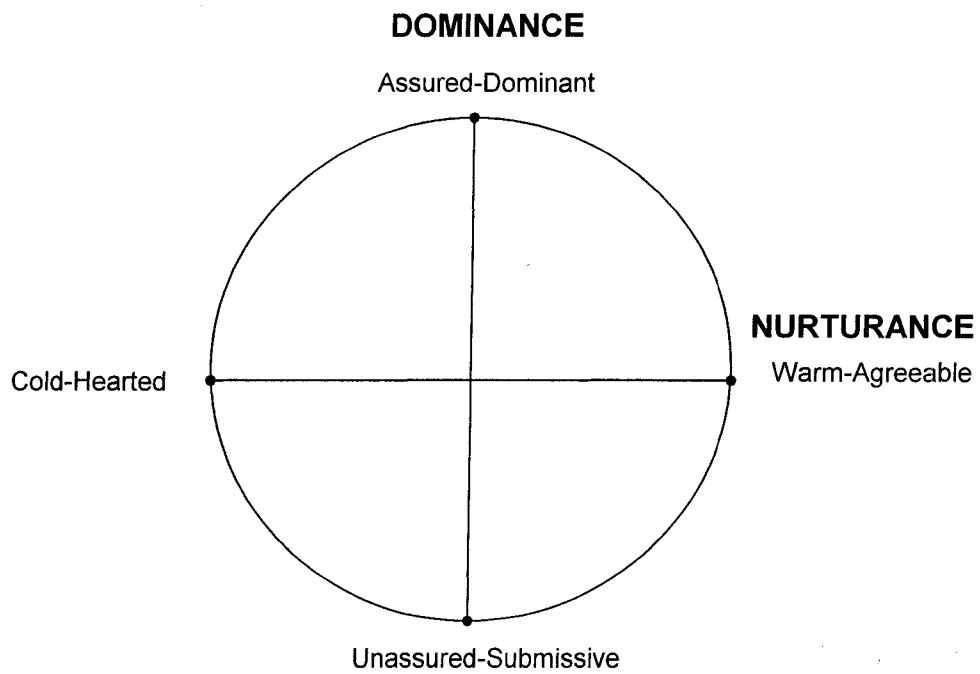


Figure 2. The Interpersonal Trait Circumplex (Wiggins, Trapnell, & Phillips, 1988).

(Korabik, 1999; Korabik & McCreary, 2000; McCreary & Korabik, 1994), it is undesirable and maladaptive to possess either too little or too much agency or communion. Too little agency may result in individuals being overly submissive, however too much agency may result in being domineering. Similarly, too little communion may result in individuals being cold and antisocial, whereas too much communion may result in being overly nurturant (Korabik, 1999). Korabik and McCreary (2000) also assert that ignoring the undesirable gender-related traits and focusing exclusively on desirable agency and desirable communion may produce misleading results. Because desirable agency and desirable communion are correlated with their undesirable counterparts (unmitigated agency, unmitigated communion, lack of agency, lack of communion), outcomes that are actually due to the socially undesirable traits may be misattributed to the desirable ones.

Gender-Related Traits and Physical and Mental Health Outcomes

Socially Desirable Agency and Communion. Evidence exists to indicate that socially desirable agency and communion both have distinct, positive implications for physical, social, and psychological functioning (Helgeson, 1994; Helgeson & Fritz, 1999). Desirable communion has been linked with various positive interpersonal outcomes including increased satisfaction with relationships (Helgeson, 1994) and greater perceived social support (Helgeson, 1994; Ghaed & Gallo, 2006). These findings support the assertion that communion reflects an adaptive and positive focus on others. Similarly, research findings support the notion that desirable agency reflects a positive focus on the self, as it is associated with increased self-esteem (Saragovi, Koestner, Di Dio, & Aube, 1997) and emotional adjustment (Fritz & Helgeson, 1998; Ghaed & Gallo, 2006;

Helgeson, 1994; Helgeson & Fritz, 1999). Agency has also been associated with better adjustment to illness, as indicated by lower levels of psychological distress, better quality of life and higher levels of life satisfaction among various medical populations (Helgeson, 1993; Helgeson & Lepore, 2004; Trudeau, Danoff-Burg, Revenson, & Paget, 2003).

Unmitigated Agency and Unmitigated Communion. Even though unmitigated agency and unmitigated communion were first operationalized by Spence and colleagues in 1979, not until more recently have researchers begun to pay more attention to the negative implications of the unmitigated forms of agency and communion, particularly for health outcomes. Unmitigated communion has been associated with a number of adverse effects such as higher levels of psychological distress including anxiety, depression, and hostility (Fritz & Helgeson, 1998; Helgeson, 1993; Helgeson & Fritz, 1996, 1999), greater relationship difficulties (Helgeson, 2003; Helgeson & Fritz, 1998), and poorer adjustment to illnesses such as heart disease (Fritz, 2000), diabetes (Helgeson & Fritz, 1996), rheumatoid arthritis (Danoff-Burg, Revenson, Trudeau, & Paget, 2004; Trudeau, et al, 2003), fibromyalgia (Nagurney III, 2005), and breast cancer (Helgeson, 2003; Piro, Zeldow, Knight, Mytko, & Gradishar, 2001).

According to Helgeson and Fritz (1998), one reason individuals high in unmitigated communion experience increased psychological distress is overinvolvement in others' problems such that they take on others' problems as their own. For example, individuals higher in unmitigated communion exposed to a stranger's problems in a laboratory setting were more likely to report experiencing intrusive thoughts about those

problems days later, compared to individuals high in either communion or empathy (Fritz & Helgeson, 1998).

The importance of relationships to the individual high in unmitigated communion is also indicated by evidence that they experience greater psychological distress in response to interpersonal conflict (Reynolds, Helgeson, Seltman, Janicki, Page-Gould, & Wardle, 2006) and perceived social constraints (Danoff-Burg et al., 2004). Social constraints refer to the perception of social network members as being unreceptive to efforts to discuss stressful or traumatic events (Danoff-Burg et al., 2004; Lepore & Helgeson, 1998). These studies suggest that one potential mechanism by which unmitigated communion is related to negative outcomes is through perceived difficulties in social relationships.

Additional evidence for the role of relationship distress on both psychological and physical health outcomes among individuals higher in unmitigated communion comes from a study of adolescents with Type I diabetes (Helgeson & Fritz, 1996). Findings indicated that unmitigated communion was related to perceived magnitude, but not total number, of relationship stressors, and failed to show an association with either total number or magnitude of stressors in any other life domain. Further, the perceived magnitude of relationship stressors mediated links between unmitigated communion and both psychological distress and metabolic control. This same study also found a negative association between desirable agency and psychological distress; however, relationship stressors were not a significant mediator of this relationship. These findings suggest that the reason for increased distress among individuals high in unmitigated communion (i.e., distress related to relationships) is not the same as the reason for distress found among

individuals low in desirable agency (Helgeson & Fritz, 1996). These findings also suggest that unmitigated communion is not simply related to a greater tendency to perceive life events as stressful in general, but rather is related to greater difficulties in the interpersonal domain.

Helgeson (1994) suggests that an extreme focus on relationships combined with a lack of self-focus may also lead to adverse effects for individuals high in unmitigated communion through providing social support to others while not seeking social support for oneself. Both perceived and received social support have been shown to enhance psychological well-being and buffer the distress accompanying negative life events (Cohen, 2004; Cohen & Wills, 1985) and have been linked with beneficial effects on various aspects of the cardiovascular, endocrine, and immune systems (Uchino, Cacioppo, & Kiecolt-Glaser, 1996). Two longitudinal studies of cardiac patients found both desirable communion and unmitigated communion were related to providing social support over time (Helgeson, 1993; Helgeson & Fritz, 1999), however, unmitigated communion was more strongly related to support provision than communion. Findings among two medical populations also revealed that communion was related to receipt of social support over time but unmitigated communion was not (Helgeson, 1993, 1997). Therefore, people higher in communion appear to have more balanced relationships (both providing and receiving support) whereas individuals higher in unmitigated communion provide social support but may not necessarily receive it (Helgeson & Fritz, 1998).

Interestingly, individuals high on unmitigated communion typically do not report significantly lower levels of perceived *availability* of social support (Helgeson & Fritz, 1999). Rather, it appears they may be uncomfortable utilizing potential sources of

support. Unmitigated communion has been associated with self-reports of being uncomfortable receiving support and greater difficulty disclosing problems to others, whereas individuals higher in desirable communion did not report such difficulties (Fritz & Helgeson, 1998). Helgeson and Fritz (2000) found that unmitigated communion was related to not asking for help because they believe asking for help will annoy people, is a burden to others, and because others do not want to help. Helgeson (1994) proposes that this impaired social support is one of the primary pathways through which unmitigated communion is linked to negative mental and physical health outcomes.

In addition to not seeking social support for oneself, Helgeson (1994) proposes that lack of self-focus, or self-neglect, leads to negative health outcomes among individuals higher in unmitigated communion in part through poor health behaviour (e.g., not seeking medical care, not exercising regularly, etc.). An individual high in unmitigated communion may become so involved with other people and their problems that he or she may fail to attend to or prioritize his or her own symptoms or self-care. For example, one study found that male cardiac patients who scored high on unmitigated communion were more likely to disregard their physician's instructions to reduce household tasks and chores during the three months after hospital discharge following a cardiac event (Helgeson, 1993).

Unmitigated agency has also been associated with poorer adjustment to various illnesses, such as prostate cancer (Helgeson & Lepore, 1997, 2004) and heart disease (Helgeson, 1990). Poorer adjustment consists of both lower quality of life and increased levels of psychological distress (Helgeson & Fritz, 1999; Helgeson & Lepore, 1997, 2004; Trudeau et al., 2003). In addition to negative mood and depression, unmitigated

agency has been associated with hostility and difficulty expressing emotions (Helgeson & Fritz, 1999; Helgeson & Lepore, 1997). Helgeson (1990) also found unmitigated agency was related to increased Type A behaviour.

Similar to unmitigated communion, Helgeson (1994) has proposed that one pathway through which unmitigated agency is related to negative physical health outcomes is through impaired social support. An individual high in unmitigated agency may focus on the self to such an extent that the development of social support networks may suffer and social support may not be available to them. Helgeson (1994) suggests that the independence and self-reliance that characterize unmitigated agency should inhibit willingness to seek support and should be positively related to the presence of negative social interactions. Findings have shown that individuals with unmitigated agency are less likely to perceive themselves as belonging to a social group (Ghaed & Gallo, 2006), and they are also more likely to experience negative interactions and conflict with social contacts (Ghaed & Gallo, 2006; Helgeson, 1993). However, individuals high in unmitigated agency have not been found to be less likely to report having social support available (Ghaed & Gallo, 2006; Helgeson, 1994). Similar to unmitigated communion, individuals high in unmitigated agency may perceive that social support is available but choose not to make use of it.

In addition to not seeking social support, their extreme self-reliance also makes it more likely that an individual high in unmitigated agency will not seek professional help for either emotional or medical problems. For example, a study of cardiac patients found those higher in unmitigated agency delayed longer before seeking help after their first warning signs of a heart problem (Helgeson, 1990). Another type of health behaviour that

individuals high in unmitigated agency have been shown to have difficulty with compliance with physician's instructions, and Helgeson (1994) proposes this may be linked to a high need for control. That is, physicians' instructing patients high in unmitigated agency as to appropriate health behaviour may threaten these patients' need to feel in control and one way to restore control is through noncompliance. Finally, research has shown that unmitigated agency is linked with several maladaptive health behaviours including reckless driving, substance use, and binge eating (Danoff-Burg, Mosher, & Grant, 2006).

Lack of Agency and Lack of Communion. A lack of agency, as assessed using the unassured-submissive scale of the Interpersonal Adjectives Scales (Wiggins et al., 1988), is characterized by traits such as "unauthoritative", "timid", and "unbold". Individuals who endorse these traits tend to be shy, fearful, and submissive in social interactions, lack self-confidence and self-esteem, and fear negative evaluation (Wiggins, 1995). Interpersonal problems associated with this set of traits reflect nonassertiveness (Alden, Wiggins, & Pincus, 1990). Problems with nonassertiveness include difficulty making one's needs known to others, an inability to be firm with others, and discomfort in authoritative roles (Alden et al., 1990). Statements endorsed that reflect problems with nonassertiveness include "It is hard for me to tell a person to stop bothering me," and "It is hard for me to be assertive with another person".

A lack of communion, as assessed using the cold-hearted scale of the Interpersonal Adjectives Scales (Wiggins et al., 1988), is characterized by traits such as "unsympathetic", "cruel", and "warmthless." Individuals who endorse these traits tend to not be warm, kind, or understanding and emphasize their autonomy and freedom from

others. Interpersonal problems associated with these traits reflect a lack of warmth and nurturance (Wiggins, 1995), such as an inability to express affection toward and to feel love for another person and an inability to be generous toward, get along with, and forgive others (Alden et al., 1990). Statements endorsed that reflect problems with warmth include “It is hard for me to get along with other people” and “It is hard for me to feel close to other people.”

A recent study assessed both a lack of agency and a lack of communion, in addition to desirable agency and communion and unmitigated agency and communion, among a sample of adult daughters acting as caregivers for their parents (Nandlal, 2004). Lack of agency was associated with increased depression and a lack of communion was associated with greater social avoidance. Therefore, each of these traits are associated with unique maladaptive outcomes.

Irritable Bowel Syndrome

Epidemiology of IBS. Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder characterized by symptoms of abdominal pain and discomfort, bloating, and altered bowel function such as diarrhea and constipation (Longstreth, Thompson, Chey, Houghton, Mearin, & Spiller, 2006). IBS is considered a functional disorder because it consists of chronic or recurrent physical symptoms without any identifiable structural or biochemical abnormalities. IBS is common among the North American adult population, with prevalence estimates typically ranging from 10-15% (Saito et al., 2002). IBS is more common among women, with a female-to-male ratio of 2:1 among a non-patient population (Drossman, Li, Andruzzi, Temple, Talley, Thompson, et al., 1993), approximately 3:1 in primary care (Longstreth & Wolde-

Tsadik, 1993) and as high as 4:1 to 5:1 in specialized care (Drossman, Creed, & Fava, 1995).

With few treatment options available for managing IBS symptoms, many individuals with IBS experience significant impairment in a variety of domains such as employment and leisure activities (Bertram, Kurland, Lydick, Locke III, & Yawn, 2001; Hahn, Yan, & Strassels, 1999). One survey conducted by Dancy and Backhouse (1993) found that 74% of employed IBS sufferers had taken time off work due to IBS. The social undesirability associated with bowel habits, along with the unpredictability of symptoms (e.g., a sudden urgent need to use the washroom) can cause individuals with IBS significant anxiety and embarrassment (Bertram et al., 2001). Simply traveling to work can be difficult when some individuals with IBS find they need to stop, sometimes many times, to find a washroom. In addition, individuals with IBS may need to follow very restricted diets in order to manage symptoms, which may make eating out very difficult. Not surprising given the above concerns, IBS is often associated with increased social isolation (Bertram et al., 2001).

Recently, investigators have considered IBS as best conceptualized using a biopsychosocial framework (Drossman, 1999). Symptoms are believed to be generated from dysregulation of the central and enteric nervous systems (also known as the brain-gut connection). Evidence of physiological disturbances among patients with IBS include studies that have shown that compared to healthy individuals, patients with IBS have increased intestinal motility in response to various stressors, including physical and psychological stressors (Azpiroz, Bouin, Camilleri, Mayer, Poitras, Serra, et al., 2007; Fukudo, Kanazawa, Kano, Sagami, Endo, Utsumi, et al., 2002). Patients with IBS also

exhibit decreased thresholds for gut pain and discomfort (visceral hypersensitivity) in response to colorectal distension and various other stimuli (Azpiroz, et al., 2007; Whitehead, Holtkotter, Enck, Hoelzl, Holmes, Anthony, et al., 1990).

In addition to physiological disturbances, several psychosocial factors are consistently related to IBS and are believed to play a role in the etiology and expression of IBS symptoms. Increased rates of psychosocial difficulties and psychiatric disorders have been documented among those who seek specialist care (gastroenterology practices). Patients with IBS who seek health care, particularly at specialty clinics, have more severe medical symptoms and increased anxiety and depression (Drossman, McKee, Sandler, Mitchell, Cramer, Lowman, et al., 1988; Talley, Boyce & Jones, 1997; Whitehead, Bosmajian, Zonderman, Costa Jr., & Schuster, 1988). Prevalence of anxiety and depression among patients with IBS is higher compared with healthy controls and also compared to patients with inflammatory bowel disease (Henningsen, Zimmerman, & Sattel, 2003).

One psychosocial factor hypothesized to have a significant influence on the expression and course of IBS is psychological stress (Drossman, Creed, Olden, Svedlund, Toner & Whitehead, 1999). Several studies have implicated stress as a possible antecedent to the onset of IBS. Prospective studies have found that individuals who develop IBS symptoms following the onset of gastroenteritis report increased levels of perceived stress (Spence & Moss-Morris, 2007) and chronic interpersonal stress (Gwee, Leong, Graham, McKendrick, Collins, Walters, et al., 1999). Stress has also been associated with exacerbation of symptoms. For example, one study found that chronic life stress (duration of at least 6 months) predicted subsequent symptom intensity over a

period of 16 months (Bennett, Tennant, Piesse, Badcock, & Kellow, 1998). These studies are part of a growing body of research which highlights the importance of stress, particularly interpersonal stress, in IBS.

Drossman's (1999) biopsychosocial framework of IBS specifies that the clinical expression of IBS symptoms (e.g., a person's illness behavior, the decision to take medication or seek health care) is influenced by psychosocial factors. For this reason, the high frequency of psychosocial distress reported among patients with IBS may in part relate to their self-selection into medical practices (Toner et al., 2000). In fact, studies have revealed that patients with IBS who do *not* seek medical care do not differ significantly from healthy controls on several psychological variables (Drossman et al., 1988). Therefore, whereas psychosocial factors may play a role in the initial onset of IBS symptoms and may impact how severe and persistent the illness is, they may also impact whether or not the individual seeks medical consultation for symptoms. Therefore, it is important for research on IBS to recruit diverse samples and not exclusively from specialty care clinics as has been the most common practice to date. Whereas IBS patients do account for a large proportion of gastroenterology practice patients, they represent a minority of IBS patients as a whole, a large proportion of which never seek medical care for their symptoms. For example, Talley et al. (1997) found among a random community sample that of the 13% who met criteria for IBS, 27% had not sought medical care for their symptoms. An accurate understanding of the role that various psychosocial factors play in the etiology and expression of IBS symptoms and adjustment to living with IBS requires conducting research with samples that are more representative of the larger IBS population.

Gender Roles and IBS. Based on clinical experience conducting cognitive behavioural group therapy for women with IBS, one psychosocial factor that Toner and colleagues suggest is important to an understanding of IBS is that of gender roles (Toner & Akman, 2000; Toner et al., 2000). They propose that gender-related traits associated with the feminine gender role may not only represent a possible contributing factor in the prevalence of IBS, for both women and men, but also may have significant implications for both the expression and maintenance of IBS symptoms (Toner & Akman, 2000). In particular, they refer to the societal belief that women are naturally inclined toward taking care of others, reflected in traits such as being nurturing, encouraging, and supportive. This has led to the societal belief that it is unimportant or even wrong for a woman to place priority on herself (Toner et al., 2000). Thus, women often spend their lives attending to the needs of their families, friends, and even coworkers and feel guilty or selfish if they express a need of their own. They propose that symptoms experienced by women with IBS may be related to the stress of taking care of others while getting little support for oneself. By placing the focus on nurturing others, these women may fail to nurture or care for themselves. Toner and colleagues suggest that women need to be encouraged to include themselves among those whom they are nurturing.

In addition to lack of self-nurturance, Toner et al. (2000) identify another theme related to gender role socialization they have observed among women with IBS, that of interpersonal relations characterized by lack of assertiveness and need for approval. They assert that this stems from gender-role socialization which has encouraged girls and women to be nonassertive, to prioritize others' needs before their own, to be attuned to others' feelings, and to not express anger (Toner et al., 2000). Evidence for an increased

need for social approval comes from one study which found that a sample of female patients with IBS, recruited from a gastroenterology practice, scored higher on social desirability compared to both a group of depressed psychiatric outpatients and a control group (Toner, Koyama, Garfinkel, Jeejeebhoy, & Di Gasbarro, 1992).

In addition, there is evidence of increased rates of self-silencing among women with IBS (Ali, Toner, Stuckless, Gallop, Diamant, Gould, et al., 1996) compared to women diagnosed with organic bowel disease (inflammatory bowel disease). According to Jack (1991), self-silencing is a schema linked with the feminine gender role which reflects an attempt to create and maintain safe, intimate relationships by silencing certain thoughts, feelings and actions. Jack outlines four components of self-silencing. The first is *externalized self-perception*, which involves judging oneself by external standards. The second is *care as self-sacrifice*, which is the tendency to put the needs of other before the self in order to maintain relationships. The third is *silencing the self*, which is inhibiting self-expression and action in order to avoid conflict and possible loss of a relationship. The fourth is the *divided self*, which is presenting an outer self to the world that complies with the feminine gender role, while the inner self grows angry and hostile. The themes of self-neglect and a focus on others and relationships are common among both self-silencing and unmitigated communion. In fact, Fritz and Helgeson (1998) found that the externalized self-perception subscale of the Silencing the Self Scale (Jack, 1991) was positively correlated with unmitigated communion. Helgeson and Fritz also assessed care as self-sacrifice and silencing the self and these individual scores were each combined with other measures to form an index of overinvolvement with others and self-neglect, respectively. Unmitigated communion was associated with both of these index scores.

Thus, based on the finding that self-silencing is higher among women with IBS, it is reasonable to expect that unmitigated communion may also be more prevalent among women with IBS, at least among those who are referred to specialty clinics.

Lackner & Gurtman (2005) recently conducted a study that examined interpersonal problems among patient with IBS using the interpersonal circumplex, which has been extended to the domain of interpersonal problems (Alden, et al., 1990). Using the interpersonal circumplex, interpersonal problems are organized into eight different problem categories along a circular continuum (see Figure 3) and can be broadly classified into one of four major quadrants: hostile-dominant, friendly-dominant, hostile-submissive, and friendly-submissive. The affiliative or friendliness axis represents the range of interpersonal problems related to differences in communion, and the dominance axis reflects the range of interpersonal problems related to differences in agency. Therefore, friendly-submissive interpersonal problems are believed to reflect a combination of high communion and low agency. In contrast, hostile-submissive problems are believed to reflect a combination of interpersonal problems characterized by low agency and low communion.

Based on conceptualizations of the interpersonal behavior of IBS patients by Toner et al. (2000), Lackner & Gurtman (2005) predicted that the interpersonal problems of IBS patients would tend to fall in the friendly-submissive quadrant (e.g., trying too hard to please, too generous, trusting, caring) of the interpersonal circumplex and away from the hostile-dominance quadrant (e.g., controlling, manipulating, aggressive; see Figure 3). IBS patients with symptoms of at least moderate severity (defined as having IBS symptoms occur at least twice weekly with at least some disruption in normal

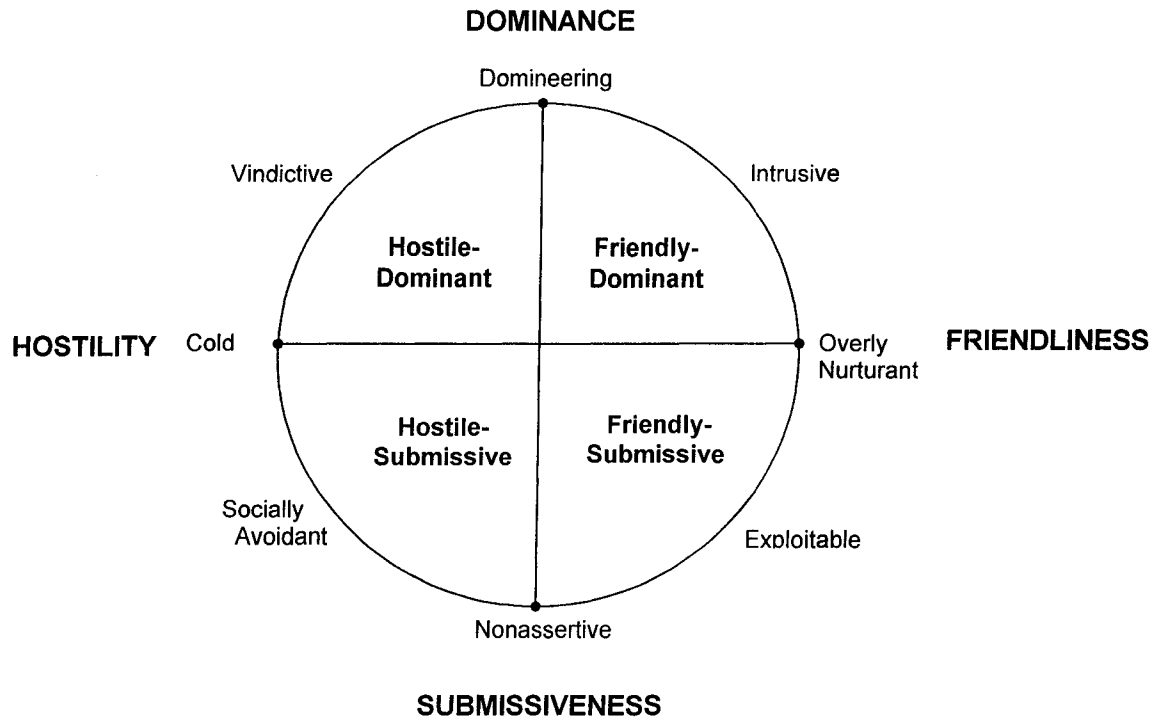


Figure 3. The Interpersonal Problem Circumplex (Alden, Wiggins & Pincus, 1990).

activities) were recruited from a specialist care setting and were compared to healthy controls. The interpersonal profile of IBS patients was primarily characterized by difficulties with assertiveness. Overall, the interpersonal problems of the IBS patient group tended to occupy the hostile-submissive quadrant of the circumplex.

Lackner and Gurtman (2005) also found evidence of differences between subgroups of IBS patients. Patients with longer symptom duration had more pronounced interpersonal problems, still occupying the hostile-submissive region. However, patients with the diarrhea-predominant subtype of IBS (based on predominant bowel habit) reported significantly greater interpersonal problems characterized by being overly exploitable in comparison with patients with either constipation-predominant or alternating bowel habits. Thus, these patients were excessively friendly or affiliative (e.g., try too hard to please others, overly permissive, caring, and generous) and their interpersonal problems fell within the friendly-submissive quadrant.

Therefore, Lackner & Gurtman's (2005) findings suggest that IBS patients in general are more likely to experience interpersonal problems that reflect a lack of agency. This finding is consistent with Toner and colleagues' clinical observation which suggests that lack of assertiveness and inability to express anger are difficulties that are prevalent among this group (Toner et al., 2000). These findings also suggest that different subgroups of IBS patients may differ on various psychosocial factors and highlights the need to examine differences among these groups. Findings among the diarrhea-prominent IBS patients also suggest that there may be an increased prevalence of unmitigated communion among this group, as their interpersonal problems reflected problems due to higher levels of communion and a lack of agency.

I also suggest the finding that interpersonal problems fell among the hostile-submissive region does not necessarily preclude the possibility of finding increased unmitigated communion among the other IBS subtypes. Ghaed and Gallo (2006) recently found that unmitigated communion's representation in the interpersonal problems circumplex space was poor. Examining the single items which revealed the largest effect sizes between IBS and control groups from the Lackner and Gurtman (2005) study, most of these items are in fact consistent with Helgeson and Fritz's (1998) conceptualization of unmitigated communion. IBS patients were more likely to endorse the following interpersonal problems (the stem for all items except the last is "it is hard for me to"):

"express my feelings to other people directly" (hostile-submissive), "open up and tell my feelings to another person" (hostile-submissive), "trust other people" (hostile), "feel close to other people" (hostile), "tell a person to stop bothering me" (friendly-submissive), "let other people know what I want" (submissive), "be aggressive toward other people when the situation calls for it" (submissive), "be assertive with another person" (submissive), "be firm when I need to be" (submissive), "keep things private from other people" (friendly-dominant), and "I feel too responsible for solving other people's problems" (dominant). The hostile-submissive items reflect difficulties expressing feelings and are similar to previously reported findings of difficulties among individuals higher in unmitigated communion with self-disclosing problems to others (Fritz & Helgeson, 1998). Finally, the two hostile items reflect difficulty trusting and feeling close with others. This is consistent with findings that individuals higher in unmitigated communion have lower self-esteem (Fritz & Helgeson, 1998) and are more likely to believe others find them less acceptable (Fritz & Helgeson, 1998).

Based on Toner and colleagues' conceptualization of interpersonal concerns prevalent among female patients with IBS, and Lackner and Gurtman's (2005) findings, I believe it will be worthwhile to examine the presence of both socially desirable and undesirable gender-related traits among this population. It appears that among female IBS patients who present to specialist care, there may be an increased prevalence of lack of agency and unmitigated communion.

Multiple Role Strain

Unmitigated communion is hypothesized to be related to psychological distress and health outcomes in part due to relationship-specific distress (Helgeson and Fritz, 1998). As described earlier, evidence in support of this includes increased sensitivity to interpersonal conflict, relationship stressors, and social constraints, which mediate or moderate the relationship between unmitigated communion and negative outcomes. The proposed study will examine whether multiple role strain is another instance of relationship-specific distress related to unmitigated communion. Multiple role strain is defined as the felt difficulty in fulfilling role obligations (Goode, 1960) and given the importance of relationships and a need to please others, as well as a desire to maintain control over relationships, I suggest that difficulty fulfilling role demands will be more distressing for women higher on unmitigated communion. In addition, women higher in unmitigated communion may take on more responsibilities within these roles due to increased provision of support, desire for approval, and overinvolvement in others' problems.

A recent survey of Canadian employees found that the proportion of the workforce reporting role overload and role conflict has increased since the early 1990's

and is having a negative impact on both the health and well-being of men, and to an even greater extent, women (Duxbury & Higgins, 2003). In the new millennium there are still indications that women, more than men, face challenges balancing paid work and other responsibilities. Duxbury and Higgins (2003) found that women were more likely than men to report high levels of role overload and high caregiver strain. The women also reported devoting more hours per week than working men to non-work activities such as child care and elder care and they were also more likely to have primary responsibility for non-work tasks (Duxbury & Higgins, 2003). A recent study of full-time professional Canadian employees found that women were more likely to experience higher levels of work-family conflict compared to men (McElwain, Korabik, & Rosin, 2005). Duxbury & Higgins found that those with dependent care responsibilities (child or elder care) reported higher levels of role overload and work-life conflict than those without such responsibilities, and may partly explain why women experience greater overload and work-life conflict as women more often take on these responsibilities.

Duxbury & Higgins (2003) found that role overload among Canadian employees is positively associated with perceived stress, burnout and depressed mood, and is negatively associated with life satisfaction and perceived physical health. Increased levels of role overload and role conflict were also associated with decreased levels of family and parental satisfaction such that these individuals are less satisfied with their family life and their ability to parent and are less likely to feel that their families are stable and work well together (Duxbury & Higgins, 2003). In particular, women were less likely to indicate that they were satisfied with their abilities as a parent. This gender difference is interesting because women spend more time in child care than men. Duxbury and

Higgins suggest that this may indicate that many women judge their performance as a parent using outdated and perhaps unrealistic standards, that is, they compare themselves to their own mothers. Others have argued, from a feminist perspective, that women's role strain is compounded by living within a broader sociopolitical context which socializes females to believe that they should be "superwomen" who are able to handle all responsibilities of work and home (Worell & Remer, 2003). Thus, it is clear that role strain is a common issue in Canada, is associated with multiple negative outcomes, and is more prevalent among women.

Statement of Purpose and Hypotheses

Utilizing the differentiated multidimensional gender role model (Korabik, 1999; Korabik & McCreary, 2000; McCreary & Korabik, 1994) and Toner et al.'s (2000) conceptualization of the impact of gender roles on the expression and maintenance of IBS symptoms as theoretical and conceptual frameworks, the overall purpose of the proposed study was to examine the impact of socially desirable and undesirable gender-related traits on quality of life and psychological adjustment among women with IBS. Toner et al. (2000) suggest that personality traits traditionally associated with the feminine gender role, such as lack of assertiveness and nurturing others, have implications for both symptoms and quality of life among women with IBS. The traits identified by Toner and colleagues are consistent with both unmitigated communion and a lack of agency. The only study that has examined gender-related traits among women with IBS (Ali, Richardson, & Toner, 1998) assessed only desirable communion among a sample of men and women recruited from hospital gastroenterology practices and found communion was related to disease conviction and hypochondriasis. However, both the differentiated

multidimensional gender role model and recent empirical findings (Helgeson & Fritz, 1999) suggest that only socially undesirable gender-related traits are associated with maladaptive outcomes. Therefore, because socially desirable traits are correlated with their undesirable counterparts, findings may be misattributed to the socially desirable traits when undesirable traits are not assessed as well. Therefore, the proposed study assessed both socially desirable and undesirable gender-related traits in order to assess their unique impact on outcomes.

The outcomes of interest in the proposed study were quality of life and psychological adjustment. Rather than using a generic quality of life measure, an IBS-specific quality of life measure was utilized in order to assess those aspects of quality of life that are most relevant to IBS symptoms and their impact in multiple domains. Psychological adjustment to chronic illness is most commonly conceptualized as the absence of psychological disorder, psychological symptomatology, and/or negative affect (Stanton, Revenson, & Tennen, 2007). Researchers have also begun to incorporate positive affect and personal growth into definitions of adjustment (Stanton et al., 2007). Psychological adjustment was operationalized in the current study as decreased levels of negative affect and increased levels of positive affect.

The first objective of the proposed study was to examine whether socially desirable (communion, agency) and socially undesirable (unmitigated communion, unmitigated agency, lack of communion, lack of agency) gender-related personality traits were associated with quality of life and psychological adjustment among a sample of women with irritable bowel syndrome. With respect to the first study objective, three hypotheses were made:

Hypothesis 1a states that unmitigated communion, unmitigated agency, and lack of agency would be associated with lower quality of life and poorer psychological adjustment. Both unmitigated communion and unmitigated agency have been negatively associated with indicators of quality of life (Helgeson, 2003; Helgeson & Lepore, 2004; Trudeau et al., 2003) and psychological adjustment (Fritz, 2000; Helgeson, 2003; Helgeson & Lepore, 2004; Trudeau et al., 2003) among other samples with chronic illness. I hypothesized that the proposed study would extend these findings to a sample with IBS. Lack of agency has not been assessed, to my knowledge, among any medical populations. However, lack of agency has been associated with increased depression among adult caregivers (Nandlal, 2004) and given that desirable agency is positively associated with quality of life and psychological adjustment, I hypothesized that lack of agency would be negatively associated with both quality of life and psychological adjustment.

Hypothesis 1b states that desirable agency would be associated with greater quality of life and greater psychological adjustment. Agency has been positively associated with indicators of quality of life (Helgeson, 1993; Helgeson & Lepore, 2004; Trudeau et al., 2003) and psychological adjustment (Helgeson, 1993; Helgeson & Lepore, 2004; Trudeau et al., 2003) among other samples with chronic illness and I hypothesized that the proposed study would extend these findings to a sample with IBS.

Hypothesis 1c states that desirable communion and lack of communion would not be associated with quality of life or psychological adjustment. Research among other samples of chronic illness has failed to find an association of communion with indicators of quality of life (Fritz, 2000; Trudeau et al., 2003) or psychological adjustment (Fritz,

2000; Nandlal, 2004; Trudeau et al., 2003). Based on these findings, I hypothesized that both desirable communion and lack of communion would not be significantly associated with either quality of life or psychological adjustment.

The second objective of the proposed study was to examine whether multiple role strain uniquely mediated the relationship between unmitigated communion and both quality of life and psychological adjustment among women with IBS. With respect to the second study objective, three hypotheses were made:

Hypothesis 2a states that multiple role strain would mediate the relationship between unmitigated communion and both quality of life and psychological adjustment.

Research has found that various instances of relationship-specific distress, such as magnitude of relationship stressors (Helgeson & Fritz, 1996) and number of perceived social constraints (Lepore & Helgeson, 1998), mediate or moderate the relationship between unmitigated communion and negative outcomes among various medical populations. I hypothesized that multiple role strain would also be associated with unmitigated communion. Because of the importance of relationships and a need to please others, as well as desire to maintain control over relationships, I expected that difficulty fulfilling role demands would be more distressing for women with unmitigated communion. In addition, women higher in unmitigated communion may take on more responsibilities within these roles due to increased provision of support, desire for approval, and overinvolvement in others' problems. Multiple role strain is related to poorer health and greater psychological distress (Duxbury & Higgins, 2003) and therefore I hypothesized it would be related to poorer quality of life and psychological

adjustment and would partially mediate an association between unmitigated communion and both of these outcomes.

Hypothesis 2b states that multiple role strain would not mediate the relationship between lack of agency, unmitigated agency, or desirable agency and quality of life or psychological adjustment. Due to the lack of research in this area, examination of this hypothesis was exploratory.

Hypotheses were not specified for desirable communion and lack of communion because they were not hypothesized to be associated with the outcome variables.

Because perceived stress is also related to unmitigated communion (Willard, 1996) and was expected to be related to multiple role strain, and because stress is believed to play an important part in IBS, I also assessed perceived stress to determine whether multiple role strain was related to unmitigated communion when the relationship with general perceived stress was accounted for.

Research indicates that individuals with medically unexplained physical symptoms, such as those of IBS, often perceive that their symptoms are met with skepticism by physicians. In such cases, patients report feeling that their illness is not viewed as legitimate and that their suffering is minimized and their symptoms are viewed as “psychosomatic” or imagined (Bertram, et al., 2001; Nettleton, 2006; Ware, 1992; Werner & Malterud, 2003). This perceived lack of legitimization is associated with psychological distress (Lehman, Lehman, Hemphill, Mandel, & Cooper, 2002; Ware 1992) and has a impact on relationships, including the patient-physician relationship (Haugli, Strand, & Finset, 2004). Therefore, perceived lack of legitimization was also

assessed in the current study to determine whether it was associated with quality of life and psychological adjustment.

Much of the research to date on IBS has recruited samples from specialist care settings such as gastroenterology practices. This is problematic because findings regarding psychosocial factors associated with IBS may be specific to patients who are seen in specialist clinics and may therefore be associated with certain patterns of health care seeking rather than with IBS per se (Ali et al., 1998). This same limitation applies to the psychosocial factors implicated by Toner and colleagues, which is based on their work with clients enrolled in a controlled trial comparing cognitive-behavioural group therapy for IBS with other treatments. Therefore, I utilized online recruitment to attempt to recruit a broader and more representative sample.

METHOD

Participants

A total of 140 women completed the survey. Twenty-two women were excluded from the current study because they did not meet Rome III criteria¹ for a diagnosis of IBS. An additional 27 women were excluded because they were not employed. Four women were excluded because they were missing data that made it unable to determine if they met the above inclusion criteria.

The final sample consisted of 87 women, ranging from 20 to 61 years old ($M = 32.97$, $SD = 9.53$). The majority of women in the sample were White, employed full-time, were married or living with an intimate other, and had post-secondary education (see Table 1). Participants' country of residence included Canada (50.6%), the United States (37.9%), the United Kingdom (9.2%), Switzerland (1.1%), and China (1.1%).

Participants were recruited through the Internet, which consisted of posting recruitment notices on online information and support message boards. For those boards that were moderated, board moderators were first contacted and asked permission to post the recruitment notice (see Appendix B). Recruitment notices were posted on message boards related to IBS, women's health, and general health. Recruitment notices were also

¹ Rome III criteria specify that in order to be diagnosed with IBS an individual must have for at least 3 months, with onset at least 6 months previously, recurrent abdominal pain or discomfort (an uncomfortable sensation not described as pain) which is also associated with 2 or more of the following: (1) improvement with defecation; and/or, (2) onset associated with a change in frequency of stool; and/or, (3) onset associated with a change in form (appearance) of stool (Longstreth et al., 2006).

Table 1

Sample Demographic Characteristics (N = 87)

Characteristic	<i>n</i>	%
Ethnicity ^a		
White/European	79	91.9
Latin/South American	3	3.5
Bi/Multiracial	2	2.3
East Asian/Chinese/Japanese	1	1.2
Aboriginal/Metis/First Nations	1	1.2
Employment Status		
Full-time	65	74.7
Part-time	22	25.3
Level of Education		
High school graduate	13	14.9
Some college or university	21	24.1
College/university graduate	38	43.7
Some graduate school	3	3.4
Post-graduate degree	12	13.8
Relationship Status ^a		
Married/Living with an intimate other	62	72.1
Separated/Divorced	5	5.8
Single, never married	19	22.1

^a*N* = 86.

posted on non-health-related boards such as online psychological research websites. For examples of websites where recruitment notices were posted, see Appendix C.

Recruitment notices asked for participation from women who had been diagnosed with IBS and also from women who had experienced gastrointestinal symptoms not attributable to another medical condition or the side effects of medication.

Gastrointestinal symptoms were defined as abdominal pain or discomfort with increased or decreased frequency of bowel movements, which had begun at least 6 months ago and had recurred for at least the past 3 months. These symptoms were chosen to attempt to maximize the number of participants recruited who met Rome III criteria. All participants were offered the chance to enter a draw for 1 of 5 gift certificates valued at \$25 CAD (23 USD, 18 EUR, or 12 GBP for women who lived outside of Canada) for Amazon or Chapters Indigo online bookstores.

Measures

Extended Personal Attributes Questionnaire (EPAQ; Spence et al., 1979). The EPAQ (see Appendix D) is a widely used and well validated measure of both socially desirable and undesirable gender-related personality traits. Participants completed the three scales of the EPAQ that assess agency, communion, and unmitigated agency. Each scale consists of eight items. For each item, participants are asked to indicate the number that best describes where they fall on a 5-point scale anchored by bipolar characteristics, such as 1 = “not at all competitive” and 5 = “very competitive.” Reliability analyses revealed adequate internal consistencies for the agency ($\alpha = .77$) and unmitigated agency ($\alpha = .75$) scales. However, internal consistency for the communion scale ($\alpha = .62$) was lower compared to previously reported Cronbach’s alpha values which range between .70

to .82 (Fritz & Helgeson, 1998; Helgeson, 1993, 1994; Helgeson & Fritz, 1996, 1998; Piro et al., 2001). Item-total score correlations revealed that one item (“very emotional”) was negatively correlated with the total score and on this basis was deleted, which yielded a more acceptable alpha of .69. Helgeson, Escobar, Siminerio, & Becker (2007) also reported that this particular item lowered internal consistency and excluded it, indicating an issue with the item that was not specific to the current sample. Higher scores indicate greater levels of agency, communion, and unmitigated agency.

Revised Unmitigated Communion Scale (UCS; Fritz & Helgeson, 1998). While the EPAQ does include a scale that assesses unmitigated communion, both the construct validity and reliability of this scale have been questioned (Helgeson, 1993). On this basis, Helgeson (1993) developed a new 8-item measure of unmitigated communion. The revised UCS scale (see Appendix E) includes a ninth item (Fritz & Helgeson, 1998). For each item, participants are presented with a statement and are asked to rate the extent to which it is self-descriptive on a 5-point scale ranging from 1 = “not at all” to 5 = “very much”. Sample statements include “I always place the needs of my friends and family above my own”, and “I often worry about other people’s problems.” Reliability analyses revealed acceptable internal consistency ($\alpha = .72$), which is consistent with findings from other samples which report alphas typically ranging from .70 to .80 (Fritz & Helgeson, 1998; Helgeson, 1993, 1994, 2003; Helgeson & Fritz, 1996, 1999). Higher scores indicate greater levels of unmitigated communion.

Interpersonal Adjective Scales-Revised (IAS-R; Wiggins, 1995). The IAS-R assesses interpersonal traits in the eight domains which constitute the interpersonal trait circumplex model (see Figure 2). Participants were presented with the two scales –

unassured-submissive and cold-hearted – which assess lack of agency and lack of communion, respectively. Each scale consists of eight items (see Appendix F for sample items). On each item, participants are presented with a trait and asked to indicate the extent to which it describes them using an 8-point Likert scale ranging from 1 = “extremely inaccurate” to 8 = “extremely accurate.” Reliability estimates for the unassured-submissive (lack of agency; $\alpha = .87$) and cold-hearted (lack of communion; $\alpha = .79$) scales are comparable to values reported by Wiggins (1995).

Women’s Role Strain Inventory (WRSI; Lengacher, 1997). The WRSI is a 44-item questionnaire used to measure multiple role strain among working women engaged in multiple roles, such as employed worker, mother, and spouse (see Appendix G). The WRSI yields an overall multiple role strain score and three subscale scores: role distress, role enhancement, and role support. Role distress reflects the adverse strain associated with multiple roles (e.g., “I find myself unable to satisfactorily manage routine household tasks”). Role enhancement reflects the positive aspects of occupying multiple roles (e.g., “I am working to please myself”). Role support indicates the perceived amount of support from significant others with regard to carrying out multiple roles (e.g., “My husband/significant other is emotionally supportive of my work”). Women are asked to rate how much they agree with each statement on a 5-point Likert scale, from 1 = “strongly agree” to 5 = “strongly disagree.” The original questionnaire was modified by adding a “not applicable” response option, as some items may not apply to all women. For example, the item “My husband/significant other is not emotionally supportive to my work”, would not apply to single women not currently in a relationship. See the Results section for how scores were computed when there were ‘not applicable’ and missing

responses. The sum of the three subscale scores equal the overall multiple role strain score. Higher multiple role strain scores indicate greater strain. Role enhancement and role support are scored so that higher scores indicate lower role enhancement and less role support. Similar to findings across other samples, as reported by Lengacher and Sellers (2003), analyses revealed good to excellent internal consistencies for the overall multiple role strain score ($\alpha = .95$) as well as each subscale: role distress (16 items; $\alpha = .91$), role enhancement (16 items; $\alpha = .88$), and role support (12 items; $\alpha = .85$).

Irritable Bowel Syndrome Quality of Life (IBS-QOL; Drossman, Patrick, Whitehead, Toner, Diamant, Hu, et al., 2000; Patrick, Drossman, & Frederick, 1997; Patrick, Drossman, Frederick, Dicesare, & Puder, 1998). The IBS-QOL is a 34-item self-report measure of IBS-specific quality of life (see Appendix H). Each item presents a statement and asks participants to indicate the response which best applies to how they have felt in the past 30 days, using a 5-point Likert scale ranging from 1 = “not at all” to 5 = “extremely” or “a great deal.” Sample items include “I feel my life is less enjoyable because of my bowel problems” and “My life revolves around my bowel problems.” Items are summed to calculate an overall score, which is comprised of eight subscales: dysphoria, interference with activity, body image, health worry, food avoidance, social reaction, sexual, and relationships. The overall and subscale scores are each transformed to a scale ranging from 0 (poor quality of life) to 100 (highest quality of life). Transformation requires subtracting the lowest possible raw score from the actual raw score, dividing by the possible raw score range, and multiplying by 100. Patrick et al. (1997) found evidence of convergent validity such that IBS-QOL scores were associated with number of IBS symptoms, severity of IBS symptoms, number of medical visits in

the past 6 months, and number of missed work days in the past year attributed to bowel problems. The reliability estimates for the overall score ($\alpha = .96$) and the dysphoria ($\alpha = .93$), interference with activity ($\alpha = .85$), food avoidance ($\alpha = .80$), social reaction ($\alpha = .75$), and body image ($\alpha = .76$) subscale scores were consistent with findings from Patrick et al. (1997), indicating good to excellent internal consistency. The reliability estimates for the relationships ($\alpha = .70$) and sexual ($\alpha = .90$) subscales were somewhat higher than reported by Patrick et al. (1997). Cronbach's alpha for the health worry subscale ($\alpha = .44$) was considerably lower than the value of .70 reported by Patrick et al. (1997). Item-total correlations for each of the three items that comprise the health worry subscale were examined and because each item was positively correlated with the overall score and would not increase the Cronbach's alpha value if they were deleted, they were retained when computing the overall score. However, because of such poor internal consistency, the health worry subscale was excluded from analyses on IBS-QOL subscales.

Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). The PANAS was used to assess state positive and negative affect (see Appendix I). Each of the 20 items present a word or phrase (e.g., "cheerful", "irritable", "disgusted with self") for which participants were asked to indicate the extent to which they had felt this way during the past few weeks on a Likert scale ranging from 1 = "very slightly or not at all" to 5 = "extremely". Watson and Clark (1999) report the correlation between positive affect and negative affect scales range from -.05 to -.35, providing evidence of discriminant validity. Watson and Clark (1999) also report very good internal consistency estimates, ranging from .83 to .90 for positive affect, and from .85 to .90 for negative affect. Internal consistency estimates for the current sample were slightly higher for both

positive affect ($\alpha = .92$) and negative affect ($\alpha = .91$). Higher scores indicate greater negative or positive affect.

Perceived Stress Scale (PSS; Cohen & Williamson, 1988). The PSS is a 10-item self-report measure of the extent to which situations in one's life are appraised as stressful (see Appendix J). Items assess three dimensions of perceived stress: feelings of unpredictability, uncontrollability, and being overloaded. Each item asked participants to indicate the frequency with which they have experienced various feelings and thoughts over the past month, rated on a 5-point Likert scale from 1 = "not at all" to 5 = "about every day." Sample items include "In the last month, how often have you been able to control irritations in your life?" and "In the last month, how often have you felt nervous and "stressed"? While perceived stress is associated with psychological distress, Cohen and Williamson (1988) cite evidence to support that the PSS is distinct from other general psychological distress scales. The reliability estimate for the current sample was excellent ($\alpha = .91$) and higher than the alpha of .78 reported by Cohen and Williamson (1988). Higher scores indicate a greater degree of perceived stress.

Rome III Diagnostic Criteria for Irritable Bowel Syndrome Questionnaire (Drossman, Corraziari, Delvaux, Spiller, Talley, Thompson, et al., 2006). Participants were asked to complete a 10-item measure designed to assess whether individuals meet Rome III diagnostic criteria for IBS (see Appendix K). The Rome III criteria are determined by consensus by the Rome Foundation, an international group of experts in functional gastrointestinal disorders. The measure was validated with a sample of 539 healthy controls and 326 patients with IBS, and it was found that the questionnaire diagnosis had good sensitivity (71%) and excellent specificity (88%) when compared to

gastroenterologist diagnosis. Test-retest agreement for IBS diagnosis over a 2-week interval was 82% (Drossman et al., 2006). The questionnaire also categorizes individuals into the following subtypes: IBS-constipation, IBS-diarrhea, IBS-mixed and IBS-unsubtyped.

IBS and General Health Questionnaire. Participants were asked questions about time of onset of IBS or undiagnosed gastrointestinal symptoms; whether symptoms had been discussed with a primary care doctor or specialist; whether they had been diagnosed with IBS by a medical doctor; number of medical visits for symptoms in the past 3 and 12 months; whether they were on medication for symptoms; whether they had ever perceived the legitimacy of their symptoms had been questioned by a medical professional; and to list any other chronic health conditions (see Appendix L).

Demographic Questionnaire. The demographic questionnaire asked participants questions regarding age; sex; ethnicity; employment; level of education; relationship status; first language; mental health conditions; number of children, teens and individuals 65 or older living at home; roles occupied; and country of residence (see Appendix M).

Procedure

Online recruitment notices provided a link to the survey introduction webpage (see Appendix N). From the survey introduction webpage, individuals interested in continuing to the survey clicked a link which sent them to the login webpage, where they entered the group userid and password provided in recruitment notices. The survey was password protected to prevent copyright materials from being available in the public domain. Before beginning the survey, participants were required to read the letter of information (see Appendix O) and indicate consent by clicking “I agree to participate”,

which then directed participants to the survey instructions webpage (see Appendix P). The survey instructions explained the three options available at the end of each page of the survey: “Save and Continue” sent participants to the next page of the survey, “Save and Close” saved the participant’s responses on that page and logged out of the survey, and “Quit the Survey” did not save responses and sent participants to the draw entry form. Participants were asked to create a unique personal password so that if they chose to, they could save their survey responses and return at another time to complete the survey. After participants read the instructions and created a personal password, they were directed to the online survey hosted on a secure University of Windsor website. The survey questions did not ask participants to provide any identifying information such as their name or contact information. After completing the survey, participants were directed to the draw entry form (see Appendix Q) where they were given the option of providing an e-mail address where they could be contacted if they won the draw for 1 of 5 gift certificates. Participants were assured that their e-mail address would not be used for any purpose other than for contacting the winners and that e-mail addresses would not be linked with survey responses. E-mail addresses and survey responses were sent to separate databases. After participants chose to submit or skip the draw entry form, they were presented with an explanation of the study (debriefing information) which they could print and keep for their records (see Appendix R). Participants were informed that a brief report of the study findings would be available on the survey website by December 2007.

The online survey included the following self-report measures, presented in the following order: the agency, communion, and unmitigated agency scales of the Extended

Personal Attributes Questionnaire (EPAQ); the Revised Unmitigated Communion Scale (UCS); the unassured-submissive and cold-hearted scales of the Interpersonal Adjectives Scale-Revised (IAS-R); the Women's Role Strain Inventory (WRSI); the Irritable Bowel Syndrome Quality of Life measure (IBS-QOL); the Positive and Negative Affect Schedule (PANAS); the Perceived Stress Scale (PSS); the Rome III IBS diagnostic criteria questionnaire; an IBS and general health questionnaire; and a demographic questionnaire.

RESULTS

Preliminary Analyses

Preliminary data screening identified missing data which did not appear to have any discernable pattern suggesting they were due to random error. Missing item values from multiple-item scales were replaced using the *person mean substitution approach* (Downey & King, 1998), which substitutes the mean response on the other items on the scale for that individual. Recent recommendations suggest person mean substitution is a simple and effective method which provides good estimates of missing data (Downey & King, 1998; McDonald, Thurston, & Nelson, 2000; Roth, Switzer III, & Switzer, 1999) and is recommended over listwise deletion and substituting the mean response on an item across individuals for preserving statistical power and reproducing both the original data and the psychometric properties of the scale (McDonald et al., 2000; Roth et al., 1999). The person mean substitution method was also used to replace “not applicable” responses on the WRSI when the number of items missing per scale was 25% or less. Where more than 25% of items were missing on a scale, the scale score was not computed. Missing variables were deleted pairwise for correlational analyses and listwise for multiple regression analyses.

Prior to analysis, assumptions of multiple regression were evaluated. Normality was assessed using SPSS DESCRIPTIVES; using a cut-off of $p < .001$, no variables had significant skewness or kurtosis. No cases identified as univariate or multivariate outliers were judged to be influential, based on a Cook’s distance less than one, and therefore all cases were retained. Residual plots were examined to screen for linearity and homoscedasticity and no violations were found.

Descriptive Statistics

Participants reported the onset of IBS symptoms from 0.5 to 31 years ago ($M = 10.61$, $SD = 7.69$); the median was just below 8 years. Two participants did not indicate when they first experienced the onset of IBS symptoms but did indicate on the Rome III questionnaire that they had experienced symptoms for at least 6 months. According to the Rome III questionnaire, participants were classified as having the following subtypes of IBS: diarrhea predominant (33%), constipation predominant (3%), mixed (61%), and undifferentiated (1%). In order to meet Rome III criteria, all women indicated they had experienced symptoms of abdominal pain and discomfort at least two to three days per month in the last 3 months, however, the majority of participants reported experiencing these symptoms more frequently: 61% on a weekly basis and 30% on a daily basis.

Almost all participants (95%) reported they had spoken with a medical doctor about their IBS symptoms. More than half of the sample reported that they had seen a gastroenterologist for their IBS symptoms (60%). The majority of participants (88%) reported they had been diagnosed with IBS by a medical doctor. Time of diagnosis ranged from 0 to 32 years ago ($M = 6.46$, $SD = 6.46$), with 22% diagnosed within the past year, 37% diagnosed within the past 1 to 5 years, 21% diagnosed 5 to 10 years ago, and the remaining 20% diagnosed more than 10 years ago. Of the 76 women who reported having been diagnosed with IBS, a little more than half (55%) had been diagnosed by a gastroenterologist, and the remaining were diagnosed by a primary care doctor. Thirty-eight percent of women were on medication for their IBS. While the number of visits to a physician for IBS symptoms ranged from 0 to 6 within the past 3 months and 0 to 17 in the past 12 months, both the median and modal response was 0 and 1, respectively. Of

the 83 women who had spoken to a doctor about their IBS symptoms, 54% responded “Yes” when asked “Have you ever spoken to a doctor about your IBS or undiagnosed gastrointestinal symptoms and felt the legitimacy of your symptoms were being questioned? That is, did you ever feel that a doctor downplayed how bothersome your symptoms are to you or questioned whether you in fact have a real medical illness?”

Forty-five percent of participants reported an additional chronic health problem. A minority (38%) of the participants had been diagnosed with psychiatric or mental health conditions. The two most common diagnoses were anxiety disorders (26%) and mood disorders (25%). Only two women reported additional diagnoses, one reported an eating disorder and one reported schizophrenia.

With respect to multiple roles, the number of roles woman occupied at the time of study participation ranged from one (employee only) to five. The majority (76%) of participants reported either 2 or 3 roles. In addition to employee, additional roles included spouse or partner (77%), parent (44%), volunteer (31%), caregiver for an elder (8%) and other (13%).

Descriptive statistics for all predictor and dependent variables (including subscales) are presented in Table 2. Mean levels of agency, communion, unmitigated agency, and unmitigated communion were similar to levels reported among several other female medical populations, including women with rheumatoid arthritis (Danoff-Burg, et al., 2004; Trudeau, et al., 2003), coronary heart disease (Fritz, 2000), and fibromyalgia (Nagurney III, 2005). No studies which assessed lack of agency and lack of communion among a medical population could be located, however, the average scores in the current sample correspond to T scores based on a normative sample of adult women (Wiggins,

Table 2

Means, Standard Deviations, and Ranges for Predictor and Dependent Variables

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	Sample Range	Scale Range
Agency	87	26.13	5.15	13.0 - 37.0	8 - 40
Communion	87	28.76	3.43	16.0 - 35.0	7 - 35
Unmitigated Agency	87	18.71	4.66	9.0 - 30.0	8 - 40
Unmitigated Communion	87	33.13	5.12	19.0 - 45.0	9 - 45
Lack of Agency	87	3.55	1.23	1.0 - 6.5	1 - 8
Lack of Communion	87	2.10	0.92	1.0 - 5.8	1 - 8
IBS-Quality of Life Overall	87	44.95	21.10	5.2 - 83.0	0 - 100
Food Avoidance	87	19.35	22.10	0 - 91.7	0 - 100
Interference With Activity	87	45.20	23.57	0 - 89.3	0 - 100
Social Reaction	87	46.62	26.10	0 - 100.0	0 - 100
Relationships	87	55.75	27.38	0 - 100.0	0 - 100
Body Image	87	51.51	26.58	0 - 100.0	0 - 100
Sexual	87	52.59	33.08	0 - 100.0	0 - 100
Dysphoria	87	43.47	26.71	0 - 90.6	0 - 100
Negative Affect	87	25.89	9.25	10.0 - 48.0	10 - 50
Positive Affect	87	27.60	8.29	11.0 - 50.0	10 - 50
Multiple Role Strain	78	124.18	25.28	50.0 - 174.3	44 - 220
Role Distress	86	42.63	10.93	16.0 - 64.0	16 - 80
Role Enhancement ^a	86	51.89	9.50	18.0 - 72.0	16 - 80
Role Support ^a	78	29.07	8.12	13.0 - 47.0	12 - 60
Perceived Stress	85	20.78	7.10	0 - 35.0	0 - 40

^aHigher scores on Role Enhancement and Role Support subscales indicate lower levels of role enhancement and role support.

1995) of 48 and 52, respectively, suggesting the average level of these traits were fairly representative of the greater adult female population.

Overall IBS-specific quality of life was significantly lower than the mean overall score reported in the IBS-QOL user's manual (Patrick, et al., 1997) for a sample of 138 women ($M = 63.1$, $SD = 18.6$; $t(223) = 6.76$, $p < .001$). Mean overall quality of life among the current sample was similar to the levels reported by Patrick et al. (1997) for individuals classified as having severe IBS.

While scores on negative affect, positive affect, and perceived stress were at or below the scale midpoint, each were significantly different than mean values reported by the scale developers for normative samples (Cohen & Williamson, 1988; Watson, Clark & Tellegen, 1988): negative affect was higher ($M = 19.50$, $SD = 7.00$; $t(671) = 7.59$, $p < .001$), positive affect was lower ($M = 32.00$, $SD = 7.00$; $t(671) = 5.34$, $p < .001$), and perceived stress was higher ($M = 13.70$, $SD = 6.60$; $t(1427) = 9.55$, $p < .001$). The mean multiple role strain score was slightly above scale midpoint and significantly higher than the mean value reported by Lengacher (1997) for a sample of 445 nurses ($M = 116.73$, $SD = 21.89$; $t(521) = 2.71$, $p < .01$).

Table 3 presents the Pearson correlation coefficients and significance levels for gender-related traits, overall quality of life, negative and positive affect, multiple role strain and perceived stress. The following intercorrelations among the gender-related traits were consistent with the differentiated multidimensional gender role model (Korabik, 1999; Korabik & McCreary, 2000; McCreary & Korabik, 1994): communion was positively correlated with unmitigated communion; communion was negatively correlated with lack of communion; communion was negatively correlated with

Table 3

Intercorrelations Among Predictor and Dependent Variables

Variable	1	2	3	4	5	6	7	8	9	10
1. Agency	--									
2. Communion	.34**	--								
3. Unmitigated Agency	-.04	-.46***	--							
4. Unmitigated Communion	-.16	.30**	-.20 [†]	--						
5. Lack of Agency	-.69***	-.27*	-.08	.11	--					
6. Lack of Communion	-.28**	-.63***	.51***	-.17	.24*	--				
7. IBS-Quality of Life Overall	.27*	.21 [†]	-.23*	-.00	-.13	-.12	--			
8. Negative Affect	-.40***	-.07	.25*	.26*	.28**	.13	-.60***	--		
9. Positive Affect	.37***	.20 [†]	-.01	-.10	-.45***	-.02	.32**	-.25*	--	
10. Multiple Role Strain	-.56***	-.24*	.22 [†]	.32**	.36**	.18	-.48***	.50***	-.41***	--
11. Perceived Stress	-.41***	-.11	.12	.33**	.24*	.11	-.50***	.63***	-.50***	.67***

[†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

unmitigated agency; agency was negatively correlated with lack of agency; lack of communion was positively correlated with unmitigated agency. However, contrary to theoretical predictions: agency and unmitigated agency were uncorrelated (rather than positively correlated); lack of agency and unmitigated communion were not correlated (rather than positively correlated); agency and communion were positively correlated (rather than uncorrelated); lack of agency and lack of communion were positively correlated (rather than uncorrelated); agency and unmitigated communion were uncorrelated (rather than negatively correlated); agency and lack of communion were negatively correlated (rather than uncorrelated); and communion and lack of agency were negatively correlated (rather than uncorrelated).

The relationships between demographic and health variables on the outcome variables were examined for potential covariates. Ethnicity, age, level of education, and relationship status were not significantly related to quality of life or psychological adjustment (negative or positive affect). Years since onset of symptoms, type of IBS, presence of another chronic health condition, and whether the participant had visited a specialist were also not significantly related to outcome variables. There was a significant difference in overall quality of life between the participants who reported that they had perceived the legitimacy of their symptoms had been questioned by a doctor ($M = 39.64$, $SD = 20.69$) compared to those who had not ($M = 50.22$, $SD = 19.93$), $t(84) = 2.41$, $p < .05$. Therefore, perceived lack of legitimization was entered as a covariate in analyses predicting quality of life.

Main Analyses

Predicting Quality of Life. I hypothesized that unmitigated communion, unmitigated agency, and lack of agency would be associated with lower quality of life, that desirable agency would be associated with greater quality of life, and that desirable communion and lack of communion would not be associated with quality of life. As predicted, desirable agency was significantly positively correlated with overall quality of life, $r(87) = .27, p = .01$, unmitigated agency was significantly negatively correlated with overall quality of life, $r(87) = -.23, p = .03$, and lack of communion was not significantly correlated with quality of life, $r(87) = -.12, p = .27$. Contrary to prediction, unmitigated communion and lack of agency were not significantly correlated with overall quality of life, $r(87) = .00, p = .99$ and $r(87) = -.13, p = .24$. While the correlation between communion and overall quality of life was not significant at $p < .05$, it approached significance, $r(87) = .21, p = .06$.

A hierarchical regression was conducted to determine whether the gender-related traits which were correlated with overall quality of life, each contributed unique variance when taking into account both the other traits which were correlated with quality of life and perceived lack of legitimization. The decision was made to include communion in the regression model because it was approaching significance ($p = .06$) and may have accounted for unique variance when other traits with which it was correlated were entered in the model. Perceived lack of legitimization was entered in the first step, and gender-related traits (agency, unmitigated agency, communion) were entered in the second step.

A summary of the results of the regression analysis are presented in Table 4.

Perceived lack of legitimization in step 1 significantly predicted 6% of the variance in overall quality of life, $F(1, 84) = 5.78, p < .05$. Adding agency, unmitigated agency, and communion to the model in step 2, significantly accounted for an additional 16% of the variance in quality of life, $\Delta F(3, 81) = 5.19, p < .01$. Consistent with predictions, agency significantly predicted higher quality of life and unmitigated agency significantly predicted lower quality of life. Also consistent with my hypothesis, communion was not a significant predictor of quality of life in the final model. The final model was significant and accounted for 22% of the variance in quality of life, $F(4, 81) = 5.56, p < .01$.

Predicting Psychological Adjustment. I hypothesized that unmitigated communion, unmitigated agency, and lack of agency would be associated with greater negative affect and lower positive affect, that desirable agency would be associated with lower negative affect and greater positive affect, and that desirable communion and lack of communion would not be associated with levels of negative or positive affect. As hypothesized, unmitigated communion, $r(87) = .26, p = .02$, unmitigated agency, $r(87) = .25, p = .02$, and lack of agency, $r(87) = .28, p = .01$ were each positively correlated with negative affect; agency was negatively correlated with negative affect, $r(87) = -.40, p < .001$; and communion, $r(87) = -.07, p = .52$, and lack of communion, $r(87) = .13, p = .22$, were each not significantly correlated with negative affect.

A standard regression was conducted to determine whether the gender-related traits which were significantly correlated with negative affect, each contributed unique variance when taking into account the other traits which were correlated with negative affect. A summary of the results of the regression analysis are presented in Table 5. The

Table 4

Hierarchical Regression Analysis Summary for Perceived Lack of Legitimization and Gender-Related Traits Predicting IBS-Specific Quality of Life (N = 87)

Variable	<i>B</i>	<i>SE B</i>	β	<i>sr</i> ²	<i>R</i> ²	ΔR^2
Step 1						
Perceived Lack of Legitimization	-10.58	4.40	-.25*	-.25	.06*	
Step 2						
Perceived Lack of Legitimization	-13.10	4.28	-.31**	-.30		
Agency	0.94	0.43	.23*	.21		
Unmitigated Agency	-1.14	0.50	-.26*	-.22		
Communion	0.42	0.74	.07	.06	.22**	.15**

* $p < .05$. ** $p < .01$.

Table 5

Standard Regression Analysis Summary for Gender-Related Traits Predicting Negative Affect (N = 87)

Variable	<i>B</i>	<i>SE B</i>	β	<i>sr</i> ²	<i>R</i> ²
Agency	-0.54	0.24	-.30*	-.21	
Unmitigated Communion	0.48	0.18	.27**	.26	
Unmitigated Agency	0.59	0.19	.30**	.29	
Lack of Agency	0.49	0.99	.07	.05	.28***

* $p < .05$. ** $p < .01$. *** $p < .001$.

model was significant and accounted for 28% of the of the total variance in negative affect, $F(4, 82) = 7.99, p < .001$.

Consistent with predictions and bivariate correlations, unmitigated communion and unmitigated agency both significantly predicted higher levels of negative affect, and agency significantly predicted lower levels of negative affect. However, lack of agency was not a significant predictor and therefore did not contribute unique variance in predicting negative affect.

As hypothesized, lack of agency, $r(87) = -.45, p < .001$, was negatively correlated with positive affect; agency was positively correlated with positive affect, $r(87) = .37, p < .001$; and lack of communion was not significantly correlated with positive affect, $r(87) = -.02, p = .82$. Contrary to prediction, unmitigated communion, $r(87) = -.10, p = .34$, and unmitigated agency, $r(87) = -.01, p = .90$, were not correlated with positive affect. The correlation between communion and positive affect was marginally significant, $r(87) = .20, p = .06$.

A standard regression was conducted to determine whether the gender-related traits which were correlated with positive affect, each contributed unique variance when taking into account the other traits which were correlated with positive affect. Communion was added to the model because it was approaching significance. A summary of the results of the regression analysis are presented in Table 6. The model was significant and accounted for 21% of the of the total variance in positive affect, $F(5, 72) = 10.88, p < .001$. Lack of agency was the only significant predictor in the final model, predicting lower levels of positive affect, as hypothesized. Also as hypothesized,

Table 6

Standard Regression Analysis Summary for Gender-Related Traits Predicting Positive Affect (N = 87)

Variable	<i>B</i>	<i>SE B</i>	β	<i>sr</i> ²	<i>R</i> ²
Agency	0.15	0.22	.10	.07	
Lack of Agency	-2.44	0.91	-.36**	-.26	
Communion	0.18	0.25	.07	.07	.21***

** $p < .01$. *** $p < .001$.

communion did not predict unique variance in positive affect. Contrary to prediction, agency did not predict unique variance in levels of positive affect.

In sum, consistent with hypotheses, unmitigated communion, unmitigated agency, and lack of agency predicted poorer psychological adjustment. In the case of unmitigated communion and unmitigated agency, poorer psychological adjustment was due to increased levels of negative affect whereas for lack of agency, poorer psychological adjustment was due to lower levels of positive affect. Also as predicted, both lack of communion and desirable communion were not significant predictors of psychological adjustment.

Testing Multiple Role Strain as a Mediator of Gender-Related Traits on Quality of Life and Psychological Adjustment. I hypothesized that multiple role strain would mediate the relationship between unmitigated communion on both quality of life and psychological adjustment, and that multiple role strain would not mediate the relationship between lack of agency, unmitigated agency, or agency on quality of life or psychological adjustment. Communion and lack of communion were not hypothesized to be associated with either quality of life or psychological adjustment and therefore multiple role strain was not expected to mediate any relationship between these traits and outcome variables.

Multiple regression analyses were used to test mediation, using the procedure outlined by Baron and Kenny (1986). According to Baron and Kenny, four conditions must be met for a variable to be considered a mediator: (1) the predictor must be significantly associated with the hypothesized mediator, (2) the mediator must be significantly associated with the dependent variable, (3) the mediator must be

significantly associated with the dependent variable, and (4) the impact of the predictor on the dependent measure is no longer significant after controlling for the mediator.

Therefore, the following four conditions must be met in the current study for multiple role strain to be considered a mediator of the relationship between a gender-related trait and an outcome variable: (1) the gender-related trait must be significantly associated with multiple role strain, (2) the gender-related trait must be significantly associated with the outcome variable, (3) multiple role strain must be significantly associated with the outcome variable, and (4) the impact of the gender-related trait on the outcome variable must no longer significant after controlling for multiple role strain.

To examine the first condition, a standard regression with each of the traits which individually correlated with multiple role strain was conducted in order to determine which contributed unique variance in predicting multiple role strain. The following traits were significantly or marginally significantly correlated with multiple role strain: agency, $r(78) = -.56, p < .001$, communion, $r(78) = -.24, p = .04$, unmitigated agency, $r(78) = .22, p = .05$, unmitigated communion, $r(78) = .32, p = .01$, and lack of agency, $r(78) = .36, p = .001$. Lack of communion was not significantly correlated with multiple role strain, $r(78) = .18, p = .12$. A summary of the results of the standard regression conducted with agency, communion, unmitigated agency, unmitigated communion, and lack of agency are presented in Table 7. The model was significant and accounted for 43% of the of the total variance in multiple role strain, $F(5, 72) = 10.88, p < .001$. Unmitigated communion and unmitigated agency significantly predicted higher levels of multiple role strain and agency significantly predicted lower levels of multiple role strain. Squared semipartial correlations indicate that agency predicted the largest amount of unique variance,

Table 7

Standard Regression Analysis Summary for Gender-Related Traits Predicting Multiple Role Strain (N = 78)

Variable	<i>B</i>	<i>SE B</i>	β	<i>sr</i> ²	<i>R</i> ²
Agency	-2.32	.64	-.48**	.56	
Communion	-.82	.83	-.12	.24	
Unmitigated Agency	1.17	.59	.21*	.22	
Unmitigated Communion	1.75	.52	.34**	.32	
Lack of Agency	-1.09	2.62	-.05	.36	.43***

* $p < .05$. ** $p < .01$. *** $p < .001$.

followed by unmitigated communion and unmitigated agency. Communion and lack of agency were not significant predictors and therefore were excluded from further mediation analyses.

As revealed in the regression analyses reported in the previous sections, the following traits were related to the following outcome variables and therefore satisfied the second condition: agency and unmitigated agency on quality of life; agency, unmitigated communion, and unmitigated agency on negative affect; and lack of agency on positive affect.

Bivariate correlations were examined to determine which outcome variables were associated with multiple role strain, and therefore met the third condition. Multiple role strain was significantly associated with each outcome variable: quality of life, $r(78) = -.48, p < .001$; negative affect, $r(78) = .50, p < .001$; and positive affect, $r(78) = -.41, p < .001$.

Because perceived stress was expected to be related to both multiple role strain and each of the outcome variables, before determining whether the fourth condition was met for mediation, I assessed whether multiple role strain was significantly related to each of the outcome variables when perceived stress was entered as a covariate in hierarchical regression analyses. As predicted, perceived stress was highly correlated with multiple role strain, $r(76) = .67, p < .001$, and was also significantly correlated with quality of life, $r(85) = -.50, p < .001$, negative affect, $r(85) = .63, p < .001$, and positive affect, $r(85) = -.50, p < .001$.

A summary of the results of the hierarchical regression analysis for perceived stress predicting quality of life are presented in Table 8. In step 1, perceived stress

Table 8

Hierarchical Regression Analysis Summary for Perceived Stress and Multiple Role Strain Predicting IBS-Specific Quality of Life (N = 76)

Variable	B	SE B	β	sr^2	R^2	ΔR^2
Step 1						
Perceived Stress	-1.50	0.30	-.51***	-.51	.26***	
Step 2						
Perceived Stress	-1.04	0.39	-.35*	-.26		
Multiple Role Strain	-0.20	0.11	-.23 [†]	-.17	.29***	.03 [†]

[†] $p < .10$. * $p < .05$. *** $p < .001$.

predicted 26% of the variance in quality of life, $F(1, 74) = 25.37, p < .001$. When multiple role strain was added to the model in step 2, the model significantly predicted 29% of the variance in quality of life, however, the change in R^2 was only marginally significant, $\Delta F(1, 73) = 3.10, p = .08$. Perceived stress remained a significant predictor of quality of life in step 2, and multiple role strain was only marginally significant. Perceived stress predicted lower levels of quality of life.

A summary of the results of the hierarchical regression analysis for perceived stress predicting negative affect are presented in Table 9. In step 1, perceived stress predicted 41% of the variance in negative affect, $F(1, 74) = 51.09, p < .001$. Adding multiple role strain to the model in step 2 did not predict any additional variance, $\Delta F(1, 73) = 0.59, p = .45$. Perceived stress remained a significant predictor of negative affect in step 2, and multiple role strain did not significantly predict negative affect. Perceived stress predicted higher levels of negative affect.

A summary of the results of the hierarchical regression analysis for perceived stress predicting positive affect are presented in Table 10. In step 1, perceived stress predicted 24% of the variance in positive affect, $F(1, 74) = 22.89, p < .001$. Adding multiple role strain to the model in step 2 did not significantly predict any additional variance, $\Delta F(1, 73) = 1.20, p = .28$. Perceived stress remained a significant predictor of positive affect in step 2, and multiple role strain did not significantly predict positive affect. Perceived stress predicted lower levels of positive affect.

Therefore, for each outcome variable, multiple role strain did not significantly predict unique variance when perceived stress was accounted for. Based on these findings, and the fact that perceived stress did significantly predict each of the outcome

Table 9

*Hierarchical Regression Analysis Summary for Perceived Stress and Multiple Role Strain
Predicting Negative Affect (N = 76)*

Variable	<i>B</i>	<i>SE B</i>	β	<i>sr</i> ²	<i>R</i> ²	ΔR^2
Step 1						
Perceived Stress	0.84	0.12	.64***	.64	.41***	
Step 2						
Perceived Stress	0.76	0.16	.58***	.43		
Multiple Role Strain	0.04	0.05	.09	.07	.41***	.01

*** $p < .001$.

Table 10

*Hierarchical Regression Analysis Summary for Perceived Stress and Multiple Role Strain
Predicting Positive Affect (N = 76)*

Variable	<i>B</i>	<i>SE B</i>	β	<i>sr</i> ²	<i>R</i> ²	ΔR^2
Step 1						
Perceived Stress	-.57	.12	-.49***	-.49	.24***	
Step 2						
Perceived Stress	-.45	.16	-.39**	-.29		
Multiple Role Strain	-.05	.05	-.15	-.11	.25***	.01

** $p < .01$. *** $p < .001$.

variables, the decision was made to examine perceived stress as a mediator rather than multiple role strain. Therefore, using the same criteria outlined by Baron and Kenny (1986), the following conditions must be met in the current study in order to establish perceived stress as a mediator of the relationship between gender-related traits on the outcome variables: (1) the gender-related trait must be significantly associated with perceived stress, (2) the gender-related trait must be significantly associated with the outcome variable, (3) perceived stress must be significantly associated with the outcome variable, and (4) the impact of the gender-related trait on the outcome variable must no longer be significant after controlling for perceived stress.

Bivariate correlations for those gender-related traits which had already been established as significant predictors of the outcome variables were examined and agency, $r = -.41, p < .001$, unmitigated communion, $r(85) = .33, p = .002$, and lack of agency, $r(85) = .24, p = .03$, were each significantly correlated with perceived stress. Unmitigated agency was not significantly correlated with perceived stress, $r(85) = .12, p = .28$, and therefore was excluded from further mediation analyses.

A standard regression was conducted with agency, unmitigated communion and lack of agency predicting perceived stress to determine whether each trait predicted unique variance with other traits accounted for in the model. Table 11 presents a summary of the results of the regression analysis. The model was significant and accounted for 25% of the of the total variance in perceived stress, $F(3, 81) = 8.83, p < .001$. Agency significantly predicted lower levels of perceived stress, and unmitigated communion significantly predicted higher levels of perceived stress. Lack of agency was not a significant predictor and therefore was excluded from further mediation analyses.

Table 11

Standard Regression Analysis Summary for Gender-Related Traits Predicting Perceived Stress (N = 85)

Variable	<i>B</i>	<i>SE B</i>	β	<i>sr</i> ²	<i>R</i> ²
Agency	-0.57	0.18	-.41**	-.30	
Unmitigated Communion	0.40	0.14	.28**	.28	
Lack of Agency	-0.30	0.77	-.05	-.04	.25***

** $p < .01$. *** $p < .001$.

The second and third conditions require that both the gender-related trait and perceived stress must be significantly associated with the outcome variable. Based on analyses reported above, perceived stress will be tested as a mediator of agency on quality of life and agency and unmitigated communion on negative affect.

To test the fourth condition, hierarchical analyses were conducted with perceived stress entered in the step prior to the gender-related traits to determine whether the traits significantly predicted levels of the outcome variable once perceived stress was entered into the model. A summary of the results for the hierarchical regression analysis predicting quality of life are presented in Table 12. Perceived lack of legitimization was entered in the first step, perceived stress was entered in the second step, and agency was entered in the third step. Perceived lack of legitimization in step 1 accounted for 5% of the variance in overall quality of life, $F(1, 82) = 4.38, p < .05$. Adding perceived stress in step 2 accounted for an additional 21% of the variance in quality of life, $\Delta F(1, 81) = 22.65, p < .001$. Adding agency in step 3 did not add any variance to the model, $\Delta F(1, 80) = 0.44, p = .51$. The final model was significant and accounted for 26% of the variance in quality of life, $F(3, 80) = 9.48, p < .001$. In the final model, perceived stress remained a significant predictor of quality of life and both perceived lack of legitimization and agency were not significant predictors of quality of life. Therefore, results indicate that perceived stress is a significant mediator of the relationship between agency and overall quality of life. In addition, the β value for agency was close to 0 ($\beta = .07$), indicating that perceived stress almost completely mediated the relationship between agency and quality of life.

A summary of the results for the hierarchical regression analysis predicting

Table 12

*Hierarchical Regression Analysis Summary for Perceived Lack of Legitimization,
Perceived Stress and Gender-Related Traits Predicting IBS-Specific Quality of Life
(N = 84)*

Variable	<i>B</i>	<i>SE B</i>	β	<i>sr</i> ²	<i>R</i> ²	ΔR^2
Step 1						
Perceived Lack of Legitimization	-9.20	4.39	-.23*	-.23	.05*	
Step 2						
Perceived Lack of Legitimization	-4.98	4.00	-.12	-.12		
Perceived Stress	-1.34	0.28	-.47***	-.46	.26***	.21***
Step 3						
Perceived Lack of Legitimization	-5.21	4.04	-.13	-.12		
Perceived Stress	-1.26	0.31	-.44***	-.39		
Agency	.28	0.42	.07	.06	.26***	.00

* $p < .05$. *** $p < .001$.

negative affect are presented in Table 13. Perceived stress was entered in the first step, and agency and unmitigated communion were entered in the second step. Perceived stress in step 1 accounted for 39% of the variance in negative affect, $F(1, 83) = 53.37, p < .001$. The final model accounted for 41% of the variance in negative affect, $F(3, 81) = 18.48, p < .001$, however, agency and unmitigated communion did not significantly contribute additional variance to the model, $\Delta F(2, 81) = 1.02, p = .37$. In the final model, perceived stress remained a significant predictor of negative affect and agency and unmitigated communion were not significant predictors of negative affect. Therefore, results indicate that perceived stress is a significant mediator of the relationship between both agency and negative affect and unmitigated communion and negative affect. With perceived stress in the model, the β value for agency was $-.13$, indicating that perceived stress was a partial mediator of the relationship between agency and negative affect. The β value for unmitigated communion was very close to 0 ($\beta = .02$), indicating that perceived stress almost completely mediated the relationship between unmitigated communion and negative affect.

Because lack of agency was the only significant predictor of positive affect, but was excluded from mediation analyses, perceived stress was not a significant mediator for any traits on positive affect.

In sum, perceived stress was a significant mediator of the relationship between agency and negative affect, agency and quality of life, and unmitigated communion and negative affect. Perceived stress did not mediate the relationships between unmitigated agency and quality of life, unmitigated agency and negative affect, or lack of agency and positive affect.

Table 13

Hierarchical Regression Analysis Summary for Perceived Stress and Gender-Related Traits Predicting Negative Affect (N = 85)

Variable	<i>B</i>	<i>SE B</i>	β	<i>sr</i> ²	<i>R</i> ²	ΔR^2
Step 1						
Perceived Stress	0.79	0.11	.63***	.63	.39***	
Step 2						
Perceived Stress	0.72	0.13	.57***	.49		
Agency	-0.24	0.17	-.13	-.12		
Unmitigated Communion	0.03	0.16	.02	.02	.41***	.02

*** $p < .001$.

Supplemental Analyses

To further examine the association between agency and unmitigated agency with IBS-specific quality of life, Table 14 presents zero-order and partial correlations for each of the IBS-QOL subscales. Zero-order correlations for unmitigated agency with dysphoria, social reaction, and body image subscales were significant. The partial correlations remained significant after controlling for perceived lack of legitimization, agency, and communion. In addition, the partial correlation for interference with activity was significant. Thus, higher levels of unmitigated agency were associated with lower levels of quality of life related to dysphoria, interference with activity, social reaction, and body image.

Zero-order correlations for agency with interference with activity, social reaction and relationships were significant. Partial correlations for interference with activity and social reaction remained significant after controlling for perceived lack of legitimization, unmitigated agency, and communion. The partial correlation with the relationships subscale was no longer significant and the partial correlation with the body image was significant. Therefore, higher levels of agency were associated with better quality of life related to activity interference, social reaction, and body image.

Table 14

Zero-Order and Partial Correlations Between IBS-QOL Subscales and Gender-Related Traits (N = 85)

Subscale	UnmitigatedAgency		Agency	
	<i>r</i>	Partial <i>r</i> ²	<i>r</i>	Partial <i>r</i> ²
Dysphoria	-.23*	-.24*	.18	.16
Food Avoidance	-.10	-.09	.12	.12
Interference With Activity	-.19 [†]	-.22*	.30**	.30**
Social Reaction	-.29**	-.34**	.27*	.26*
Relationships	-.10	-.05	.23*	.19 [†]
Body Image	-.23*	-.34**	.21 [†]	.24*
Sexual	-.10	-.12	.18	.15

[†] $p < .10$. * $p < .05$. ** $p < .01$

DISCUSSION

A growing body of research has revealed that personality traits associated with masculine and feminine gender roles are each associated with a range of both positive and negative physical and psychological health outcomes for both healthy and chronically ill populations. Broadly, the purpose of the current study was to determine whether these findings extended to IBS, and whether gender-related traits would be associated with IBS-specific quality of life and psychological adjustment among women with IBS. Additionally, the current study sought to determine whether multiple role strain mediated the relationship between gender-related traits and outcomes.

Gender-Related Traits and the Differentiated Multidimensional Gender Role Model

The current study found that mean levels of agency, communion, unmitigated agency, and unmitigated communion were similar to those found among other female medical populations (Danoff-Burg, et al., 2004; Fritz, 2000; Nagurney III, 2005; Trudeau, et al., 2003) and mean levels of lack of agency and lack of communion were similar to those found among the general adult female population (Wiggins, 1995). These findings are inconsistent with empirical evidence which has found elevated levels of self-silencing (Ali et al., 2000) and social desirability (Toner et al., 1992) among female IBS patients. Both self-silencing and social desirability are consistent with the increased need for social approval and self-sacrifice in order to maintain relationships that characterizes those high in unmitigated communion. In fact, evidence exists that unmitigated communion is associated with aspects of self-silencing (Fritz and Helgeson, 1998). The fact that I did not find increased levels of unmitigated communion may have been due to a number of reasons. The first possibility is that unmitigated communion is not elevated

among women with IBS. Increased levels of self-silencing among female IBS patients may have been related primarily to one of the four dimensions of self-silencing, externalized self-perception, which reflects judging oneself by external standards. This would reflect a similar need for social approval as does social desirability. It should be noted that while Toner et al. (2000) have identified several gender-related traits that may be important to our understanding of how IBS impacts women's lives, they may not be elevated among the larger IBS population. A second reason may be due to different sample characteristics and recruitment methods which may have yielded differences between the samples on certain traits. Whereas each of the above-cited studies on IBS recruited women from gastroenterology clinics, the current study used online recruitment methods and participants included women who had never seen a gastroenterologist. In addition, all participants in the current study were employed; women who are employed may differ from those who are not employed on one or more gender-related traits. However, the above reasons are speculations and future research will be needed with a more representative sample of women with IBS to determine whether the current findings are replicated or whether indeed women with IBS do exhibit elevated levels of certain gender-related traits.

With respect to the inter-relationships among the gender-related traits, not all findings were as predicted by the differentiated multidimensional gender role model (Korabik, 1999; Korabik & McCreary, 2000; McCreary & Korabik, 1994). For example, agency and communion were positively correlated and agency and unmitigated agency were not correlated. However, a review of the literature finds that predicted inter-relationships are not always found. A review by Helgeson and Fritz (1999) of the inter-

relationships among agency, communion, unmitigated agency, and unmitigated communion across six samples of healthy and chronically ill patients of varying age ranges revealed that the relationships were not always consistent. For example, agency and communion were significantly related among three of the six samples for males only, whereas the relationship was *never* significant among females. They also found that for three of the six samples, agency and unmitigated agency were significantly correlated and concluded that this finding was consistent with predictions. However, three of the six samples did not yield significant correlations between agency and unmitigated agency, as was found in the current sample, and therefore it is more appropriate to conclude that their findings for the relationship between agency and unmitigated agency were equivocal. The fact that not all inter-relationships in the current sample were consistent with past findings, and the fact that inter-correlations vary among other studies, may be due to a variety of factors relating to both sample characteristics (e.g., gender, age), and statistical considerations (e.g., statistical power, variability in scores, Type I and II errors).

The current study was unique in that it assessed lack of agency and lack of communion among a health population. Of particular interest to the current study was the theoretical prediction that lack of agency and lack of communion would be associated with unmitigated communion and unmitigated agency, respectively. The implications of these findings would mean that past empirical findings attributed to unmitigated communion and unmitigated agency may in fact have been due to lack of agency and lack of communion. Inconsistent with the differentiated multidimensional gender role model (Korabik, 1999; Korabik & McCreary, 2000; McCreary & Korabik, 1994) and

past findings (Korabik & McCreary, 2000) lack of agency was not associated with unmitigated communion. Unmitigated communion was also not negatively correlated with agency or unmitigated agency. Therefore, unmitigated communion in the current sample was not related to lower levels of agency. This finding does not support Helgeson's (1994) suggestion that unmitigated communion reflects a focus on the self to the exclusion of others. Helgeson and Fritz (1999) found agency and unmitigated communion were negatively correlated in four of the six samples of females. The differing findings may again be related to differences in sample characteristics or statistical factors. Differing findings may also reflect women's socialization such that women receive contradictory messages about characteristics the ideal woman must possess. While Western society values more stereotypical masculine traits such as assertiveness and independence, women are also pressured to simultaneously adopt stereotypical feminine traits such as nurturance and passivity. In addition, women are often expected to display one set of traits in one setting, such as at work, while displaying different or opposing traits in other settings, such as among family and friends. The result may be that women do incorporate opposing sets of traits.

As predicted, lack of communion was associated with unmitigated agency. Further, unmitigated agency was negatively associated with communion in the current sample and in all six samples of females as reported by Helgeson and Fritz (1999). These findings support Helgeson's (1994) assertion that unmitigated agency reflects a focus on self to the exclusion of others. Lack of communion was not associated with any of the outcome variables, and therefore none of the relationships between unmitigated agency and outcomes in the current study were due to an association with lack of communion.

This does not rule out the possibility that lack of communion may be more relevant for other outcomes. For example, Nandlal (2004) found that lack of communion predicted social avoidance among caregivers. Therefore, lack of communion may be more relevant for particular social outcomes. In sum, further research is needed to more fully understand the pattern of inter-relationships between gender-related traits and under which conditions they vary.

Predicting Quality of Life and Psychological Adjustment

Based on past empirical findings and theory, I hypothesized the following: unmitigated communion, unmitigated agency and lack of agency would be associated with lower quality of life and poorer psychological adjustment (higher negative affect and lower positive affect); agency would be associated with greater quality of life and greater psychological adjustment (lower negative affect and higher positive affect); and communion and lack of communion would not be associated with quality of life or psychological adjustment. Results indicated that agency was associated with a better quality of life and lower levels of negative affect. In contrast, unmitigated agency was associated with lower quality of life and increased negative affect. These findings are consistent with past findings among other medical populations, including women with breast cancer (Piro et al., 2001) and rheumatoid arthritis (Trudeau et al., 2003), and men with prostate cancer (Helgeson & Lepore, 1997, 2004).

Unmitigated communion and lack of agency were associated with poorer psychological adjustment. Whereas unmitigated communion was positively associated with negative affect, lack of agency was the only trait associated with positive affect. Unmitigated communion has been associated with psychological distress among other

medical populations, including women with breast cancer (Piro et al., 2001), rheumatoid arthritis (Trudeau et al., 2003) and cardiac disease (Fritz, 2000). The current study was the first to examine lack of agency among a medical population, however, a study of female caregivers (Nandlal, 2004) found that lack of agency was associated with depression and is therefore consistent with findings from the current study. The same study also found that unmitigated communion was associated with depression as well. The current findings suggest that the reason for depression among those higher on lack of agency may have been due to lower levels of positive affect, whereas increased depression among those higher on unmitigated communion may have been due to increased negative affect. Positive affect is defined as the feelings that reflect pleasurable engagement with the environment, such as happiness, joy, excitement, enthusiasm, and contentment (Pressman & Cohen, 2005); low levels of positive affect are characterized by sadness and lethargy.

Contrary to prediction, neither unmitigated communion nor lack of agency was associated with quality of life. While unmitigated communion has consistently been associated with psychological distress across several medical populations, it's association with other factors such as social and physical functioning and well-being has not been consistent across different illnesses. For example, Fritz (2000) found among a sample of cardiac patients that unmitigated communion was associated with increased depression and anxiety, but was not associated with well-being or physical functioning. Among a sample of women with rheumatoid arthritis, Trudeau et al. (2003) found that unmitigated communion predicted psychological distress and disability, but not pain or life satisfaction. Piro et al. (2001) found among a sample of women with breast cancer that

unmitigated communion was associated with psychological distress, but not interpersonal well-being. Therefore it appears that the relationship between unmitigated communion (as well as other gender-related traits) and outcomes may differ by health context, such as type of illness, length of illness (acute vs. chronic), and other illness factors. Negative affect was highly correlated with poorer quality of life and yet unmitigated communion was not associated with quality of life. This indicates that despite the fact that quality of life and negative affect are highly correlated, they are in fact distinct constructs. Contrary to prediction, unmitigated communion was not related to lower levels of positive affect and lack of agency was not related to higher levels of negative affect. As predicted, neither communion nor lack of communion was associated with either quality of life or psychological adjustment.

Multiple Role Strain and Perceived Stress

I hypothesized that multiple role strain would mediate the relationship between unmitigated communion and each of the outcome variables. I also hypothesized that multiple role strain would *not* mediate the relationships I predicted between agency, unmitigated agency, and lack of agency and the outcome variables. I hypothesized that multiple role strain would only be associated with unmitigated communion because it reflects a source of stress that exists largely within a social context, and therefore theoretically should be associated with an extreme and maladaptive focus on others and relationships (unmitigated communion) and not with a positive focus on others (communion) or the relative absence of a focus on others and relationships (lack of communion). In fact, unmitigated communion was positively related to multiple role strain. However, multiple role strain was not associated with any outcome variables once

perceived stress was accounted for and therefore was not tested for mediation. Perceived stress mediated the association between unmitigated communion and negative affect. Perceived stress also mediated the relationship between agency and both negative affect and quality of life. Perceived stress did *not* mediate the relationship of unmitigated agency on negative affect and quality of life or the relationship of lack of agency on positive affect. Therefore, one possible mechanism through which some of the gender-related traits may have an impact on psychological adjustment and quality of life among women with IBS is through levels of perceived stress. Alternatively, perceived stress may be associated with a third variable (or set of variables) that may impact both levels of perceived stress and better adjustment to chronic illness.

Stress has long been implicated in the development of IBS and the exacerbation of its symptoms (Bennett & Kellow, 2002). From a psychosocial perspective, when a life event is cognitively appraised as threatening, emotions are evoked and an attempt at coping with the event is made. The physiological response to a stressor depends on the types of emotions that are evoked, the effectiveness of coping strategies, and the acute or chronic nature of the stressor (Bennett & Kellow, 2002). Bennett and Kellow (2002) describe alterations in physiological processes that can result from chronic stress, such as the enhanced visceral sensitivity that is observed in IBS patients. Therefore, a perceived stressor is associated with both emotional, behavioural (coping), and physiological sequelae, all of which may play a role in both the onset of IBS, the exacerbation of its symptoms, and adjustment to symptoms. Stressors include not only life events experienced by the individual with IBS, but the IBS symptoms themselves. As such, we can expect that adjustment to IBS will include cognitive evaluation of the symptoms and

their perceived threat, the emotions that are invoked by these evaluations, and coping strategies used to modify either emotional responses or the events themselves. Personality traits can impact stress in a number of ways. Personality can influence evaluations of the meaning of events (e.g., degree of threat), it can also influence evaluations of the effectiveness of coping resources and the reliance on specific coping strategies (Carver, 2007).

Perceived stress as measured in the current study reflected three dimensions: feelings of unpredictability, uncontrollability, and being overloaded. Agency has been linked with high self-esteem (Whitley, 1983) and an internal locus of control (Parsons & Betz, 2001) and therefore is believed to act as a stress buffer by causing individuals to appraise negative events as less threatening and their coping resources as more effective, given an overall sense of self-efficacy. According to cognitive adaptation theory (Taylor, 1983), perceptions of control and regaining self-esteem are two central factors in successfully adjusting to threatening events, including illness. Therefore, it is not surprising that agency was linked with lower perceived stress and in turn this mediated better adjustment to IBS. Toner et al. (2000) observed how women with IBS report that they should be in control of their bodily functions, particularly as women, and the shame that accompanies their bowel symptoms. A healthy sense of self-efficacy and self-esteem may help women with IBS feel more in control of their symptoms, and the symptoms may be perceived as less threatening to their self-esteem. This is consistent with partial correlations which found that agency was associated with increased quality of life relating to interference with activity, social reactions, and body image. Sample items on the interference with activity subscale include, "I have to avoid stressful situations

because of my bowel problems” and “I have to avoid strenuous activity because of my bowel problems”. Therefore, individuals higher in agency may be more likely to feel they can cope with these situations and do not need to avoid them. Sample items on the social reactions subscale include “I worry that people think I exaggerate my bowel problems” and “I am embarrassed by the smell caused by my bowel symptoms”. Again, a healthy self-esteem may help lessen the strength of these beliefs. Finally, sample items from the body image subscale include “I feel fat because of my bowel problems” and “I feel unclean because of my bowel problems”. As above, self-esteem may help lessen the degree to which someone’s body image is threatened by IBS symptoms.

In contrast, unmitigated agency is hypothesized to be linked with heightened need for control and increased sensitivity to threats to control (Helgeson, 1994). In fact, Helgeson and Lepore (2004) found that among men with prostate cancer, unmitigated agency was associated with decreased self-efficacy which was in turn associated with decrease in prostate function and increased psychological distress. Therefore, it is not surprising that unmitigated agency was associated with decreased quality of life and increased psychological adjustment among the current sample, especially given the lack of control that can characterize the daily symptoms and their fluctuations associated with IBS. However, it is surprising that unmitigated agency was not associated with perceived stress in the current sample. In addition to control, impaired social support and poor health behaviour are hypothesized to be additional pathways through which unmitigated agency is related to poor outcomes (Helgeson, 1994). Partial correlations indicated that unmitigated agency was associated with the dysphoria, interference with activity, social reaction, and body image subscales of the IBS-QOL. Except for dysphoria, these

associations mirror the results found with agency, however the mechanisms are distinct. Further research is necessary to elucidate the mechanisms by which unmitigated agency and other gender-related traits are related to various physical, psychological, and social outcomes among both IBS and other populations.

Similar to unmitigated agency, lack of agency was not a significant predictor of perceived stress. This is consistent with previous findings which have linked negative affect, but not positive affect, with perceived stress (Watson, 1988). It appears lack of agency is related to lack of drive and energy rather than stress and anxiety and may therefore be more relevant to other outcomes such as life satisfaction and well-being.

Finally, the relationship between unmitigated communion and negative affect was completely mediated by perceived stress and multiple role strain was not significantly associated with negative affect over and above perceived stress. This is inconsistent with findings from a study of adolescents with Type I diabetes which found that the perceived magnitude of relationship stressors (but not other types of stressors) mediated the relationship between unmitigated communion and both metabolic control and psychological distress (Helgeson & Fritz, 1996). This is also inconsistent with findings from Kessler and McLeod (1984), who demonstrated that previous findings that the emotional impact of negative life events was greater among women than men was due to a vulnerability to social network events rather than life events in general. One suggested reason for this vulnerability was extra demands placed on women by their social networks. However, it is not clear in the current study whether women high on unmitigated communion generally perceive life events as more stressful, or whether greater perceived stress was due to the greater impact of relationship stressors. The fact

that multiple role strain did not predict variance on the outcomes over and above perceived stress may have been for a number of reasons. Multiple role strain may not be as important a relationship stressor as other types such as perceived social constraints or negative interactions. Also, the measure of multiple role strain used in the current study dealt mainly with balancing work and household demands, and this may have neglected other types of significant role demands such as caregiving for older adults, and being a daughter, friend, and sister.

Limitations

Several limitations of the current study should be taken into consideration. First of all, the study was both correlational and cross-sectional and therefore causal effects cannot be inferred from the findings. In addition, given the finding that female IBS patients score higher on social desirability, levels of social desirability may have biased the responses such that more socially desirable traits were endorsed and socially undesirable traits were less likely to be endorsed.

The current sample succeeded in being more representative in terms of health care seeking, recruiting participants not only who had seen a specialist for their IBS symptoms, but also those who had not sought medical care for their IBS symptoms or had seen a primary care doctor only. However, only four women in the sample had not sought care for their symptoms. Despite this, the average overall quality of life for the current sample was very low and at a level close to that found among those classified with severe IBS (versus mild or moderate; Patrick et al., 1997). I speculate that the women with lower quality of life may have been more likely to participate due to motivation factors. Firstly, individuals who are experiencing difficulties due to IBS may be more interested in filling

out a survey about their experience living with IBS, and they may be more likely to be online seeking information and support and therefore come across the recruitment posting. I did not collect data regarding how individuals found out about the current study, and therefore I do not know from what sources participants had learned about the study, whether from IBS-related websites or other sources. I also experienced a relatively high degree of drop-out; while 185 women began the survey, only 140 completed the entire survey (76%). Again, women who are experiencing more IBS-related difficulties may not only be more likely to begin the survey, they may be more likely to complete it. Because the quality of life questions were near the end of the survey, I could not compare those who finished versus those who dropped out on quality of life, however, I was able to compare them on gender-related traits and found no significant differences.

In addition, the sample was entirely female and employed, and the majority were Caucasian. Overall, the findings may not be generalizable to the larger IBS population, particularly among men, those with better quality of life, women who are not employed, those who never seek medical care for their symptoms, and among non-Caucasian minorities. Therefore, it is imperative that these findings be replicated with a more representative sample to determine whether the same pattern of relationships are found. On a more positive note, these findings may be applicable to those women who need it the most.

Finally, because this is the first study examining both desirable and undesirable gender-related traits among a sample with IBS, I did not control for Type I error when conducting multiple statistical tests in order to avoid making Type II errors. Many

findings were significant at the $p < .001$ level and therefore had I controlled for Type I error would still have been significant.

Implications

The results of the current study have a number of implications for future research. The finding that lack of agency was associated with lower positive affect suggests that lack of agency should also be assessed when studying gender-related traits and their impact on psychological and physical health outcomes. In addition, the findings among the current study also highlight the importance of assessing gender-related traits from both masculine and feminine domains, even when the population is entirely male or female. Traits in each domain are related to unique outcomes and their inter-relations should be taken into account when conducting statistical analyses.

In addition, the current study also indicates that perceived lack of legitimization is a factor that is valuable to include in studies with IBS patients, as it was related in the current study to a lower quality of life. Perceived delegitimization has been shown to have a range of negative impacts on psychological adjustment and well-being among patients with medically unexplained physical symptoms, including increased stress (Haugli, Strand, & Finset, 2004), increased levels of depression and anxiety (Lehman et al., 2002), and feelings of humiliation and self-doubt (Ware, 1992). Perceived lack of legitimization can also have a negative impact on social functioning. Some patients try to conceal their illness from others to try to minimize stigma associated with lack of legitimization. Not only does this strain social relationships, a potential source of support, but this social withdrawal may also occur in the context of the doctor-patient relationship. Haugli et al., (2004) found that after patients perceived themselves to be called into

question by their doctor, patients hesitated to seek care or waited as long as possible before contacting him or her again. The majority of studies to date examining perceived lack of legitimization have been qualitative and therefore further exploration of this variable as part of quantitative research is necessary.

Practical implications of the current study include potential applications to interventions and programs to help individuals cope and adjust to living with IBS. Certainly, further study is required to replicate current findings and examine which gender-related traits are associated with various outcomes among a more representative sample of individuals with IBS, such as those with less severe IBS. The findings of the current study indicate that similar outcomes may be related to very different causes. For example, negative affect related to unmitigated agency and unmitigated communion are each related to different causal factors and should be approached differently. Whereas an individual high in unmitigated communion might need to be told to focus on herself and her own needs more, an individual high in unmitigated agency would need to be encouraged to not socially isolate themselves and to seek social support.

Future Directions

While the current study is consistent with a body of literature that has documented negative outcomes associated with socially undesirable gender-related traits and positive outcomes associated with socially desirable gender-related traits, few studies have addressed potential mechanisms. Future studies should further investigate the mechanisms through which gender-related traits impact physical, social, and psychological outcomes. In particular, one area that has largely been ignored has been methods of coping. Toner et al. (2000) suggest women with IBS should be encouraged to

use more engaged, problem-solving coping strategies to deal with symptoms and less escape-avoidance coping methods. Agency has been associated with more active and less avoidant coping (Lengua & Stormshak, 2000), which is especially adaptive for decreasing the impact of stress, and therefore may indicate one pathway through which agency may lower perceived stress and be associated with better adjustment to IBS. Further, adaptive coping methods can be taught to individuals with IBS to help them cope with their symptoms.

Additionally, to further understand the impact of gender-related traits on adjustment to illness in general, it is important to examine differences among those who differ on various illness factors. For example, are gender-related traits related to similar outcomes among women who have recently been diagnosed or treated for cancer compared to women who have been diagnosed with a long-term illness such as rheumatoid arthritis? Are particular gender-related traits more adaptive for particular types of illnesses? For example, agency may be more adaptive for illnesses where patients have a degree of control over their symptoms versus those characterized by less control.

Finally, future research should consider which types of interventions will be most helpful for individuals who exhibit differing levels of particular gender-related traits. For example, current cognitive-behavioural group therapy and support groups may not be utilized by individuals higher on unmitigated agency. Based on the current results, these individuals clearly need help adjusting to IBS, however, they may be the least likely to seek it. Research utilizing samples from such groups should also assess gender-related traits among their participants to determine whether they are recruiting individuals higher

on certain traits, as this may have implications for the study findings and how they are applied to interventions and our understanding of IBS.

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Appendix A

Overview of Agentic and Communal Traits

Trait	Description	Sample Items
<i>Agency</i> (socially desirable)	Positive focus on self and autonomy.	Independent Self-confident Never gives up
<i>Unmitigated Agency</i> (socially undesirable)	Focus on self to the exclusion of others. Self-absorption and negative view of others.	Arrogant Hostile Cynical
<i>Lack of Agency</i> (socially undesirable)	Shy, submissive, and self-doubting.	Timid Unauthoritative
<i>Communion</i> (socially desirable)	Positive focus on others and relationships.	Kind Aware of others' feelings Helpful to others
<i>Unmitigated Communion</i> (socially undesirable)	Focus on others to the exclusion of self. Over-involvement with others and self-neglect	I always place the needs of others above my own. Even when exhausted, I will always help other people. I often worry about others' problems.
<i>Lack of Communion</i> (socially undesirable)	Lack of warmth, sympathy and nurturance.	Unsympathetic Cold-hearted

Appendix B

Letter to Board Moderators and Online Recruitment Notice

My name is Sabrina Voci and I am a graduate student in the Applied Social Psychology program at the University of Windsor. I am conducting a study for my master's thesis project that is exploring factors that may be related to quality of life and well-being among women with Irritable Bowel Syndrome (IBS). My research is being supervised by Dr. Ken Cramer and has been approved by the University of Windsor Research Ethics Board.⁶

I am contacting you to ask you for your help in recruiting women to participate in this study. IBS is very common among women and because there are few effective treatment options, symptoms can negatively impact quality of life. It is my hope that my study will help gain a better understanding of factors that are associated with improved quality of life among women with IBS.

I am seeking participation from women with either a diagnosis of IBS **or** women who experience gastrointestinal symptoms including abdominal pain or discomfort with increased or decreased frequency of bowel movements, beginning at least 6 months ago and recurring in the past 3 months, which are not caused by either a medical condition or the side effects of medication. Participants must also be employed part-time or full-time.

If you are willing to help us with this study, I would ask that you post the information I have included below so that women who are interested in the study can click on the survey link -- www.uwindsor.ca/healthsurvey -- to find out more information about the study so that they can make an informed decision about whether they would like to participate. All information will remain anonymous and confidential and women who participate will be invited to enter a draw for 1 of 5 gift certificates (25 CAD, 23 USD, 18 EUR, 12 GBP) for Amazon or Chapters Indigo bookstores.

An e-mail to Sabrina Voci at health@uwindsor.ca to indicate whether or not you will be helping us with this research would be greatly appreciated. For more information about the study, please contact Sabrina Voci at health@uwindsor.ca, or Dr. Ken Cramer at kcramer@uwindsor.ca, (519) 253-3000 ext. 2239.

Thank you for your time and assistance -- it is very much appreciated!!

Are you a woman who has been diagnosed with Irritable Bowel Syndrome (IBS)?

OR

Are you a woman who experiences recurring gastrointestinal symptoms (abdominal pain or discomfort with increased or decreased frequency of bowel movements) and you have not seen a doctor for these symptoms?

If so, I would like to invite you to participate in my study...

My name is Sabrina Voci and I am a graduate student in the Applied Social Psychology program at the University of Windsor. I am conducting a study for my master's thesis project that is exploring factors that may be related to quality of life and well-being among women with Irritable Bowel Syndrome (IBS). My research is being supervised by Dr. Ken Cramer and has been approved by the University of Windsor Research Ethics Board.

I am seeking participation from employed women (part-time or full-time) who either have IBS *or* have experienced recurring gastrointestinal symptoms which began at least 6 months ago and have recurred for at least the past 3 months, which are not caused by a medical condition or the side effects of medication. Gastrointestinal symptoms include abdominal pain or discomfort with increased or decreased frequency of bowel movements.

If you meet these criteria and are interested in participating in my study or would like more information, visit www.uwindsor.ca/healthsurvey and log in using the group username **health** and the password **june2007**. Your help with this study would be very much appreciated and as a token of this appreciation, if you decide to complete the survey, you will be invited to enter a draw for 1 of 5 gift certificates (25 CAD, 23 USD, 18 EUR, 12 GBP) for Amazon or Chapters Indigo bookstores. All information will remain anonymous and confidential.

For more information, please contact Sabrina Voci at health@uwindsor.ca or Dr. Ken Cramer at kcramer@uwindsor.ca.

**** Feel free to pass along the survey website address to any other women you know who may be interested in participating! ****

Thank you!

Sabrina Voci
Department of Psychology
University of Windsor

Appendix C

Examples of Online Recruitment Websites

IBS Information and Support Boards

Irritable Bowel Syndrome (IBS) Self Help and Support Group

<http://www.ibsgroup.org/>

Help For IBS.com: IBS, Crohn's, & Colitis Message Boards

<http://www.helpforibs.com/messageboards/ubbthreads/ubbthreads.php>

Yahoo Health Groups: irritable_bowel_syndrome Support Group

http://health.groups.yahoo.com/group/irritable_bowel_syndrome/

Google Groups: alt.support.ibs

<http://groups.google.com/group/alt.support.ibs?lnk=lr>

HealingWell.com: Irritable Bowel Syndrome Forum

<http://www.healingwell.com/community/default.aspx?f=26>

Women's Health Information and Support Boards

Women Forums: Health and Well-Being

<http://www.womenforums.com/forum/forumdisplay.php?f=11>

Yahoo 7 Lifestyle Message Boards: Women's Health

http://au.messages.yahoo.com/health/womens_health/

Psychological Online Research Websites

Social Psychology Network: Online Social Psychology Studies

<http://www.socialpsychology.org/expts.htm>

Hanover College: Psychological Research on the Net

<http://psych.hanover.edu/research/exponnet.html>

Online Psychology Research UK

<http://onlinepsychresearch.co.uk/>

Miscellaneous

PCOS (Polycystic Ovarian Syndrome) Message Board

<http://www.soulcysters.net/>

Women Working Forums

<http://www.womenworking.com/forum/viewforum.php?f=3>

Appendix D

Extended Personal Attributes Questionnaire (EPAQ)

The items below consist of a pair of contradictory characteristics – that is, you cannot be both at the same time. The numbers form a scale between the two extremes. Indicate the number that best describes where you fall on the scale.

Not at all arrogant	1	2	3	4	5	Very arrogant
Not at all independent	1	2	3	4	5	Very independent
Not at all emotional	1	2	3	4	5	Very emotional
Looks out for self	1	2	3	4	5	Looks out for others
Very passive	1	2	3	4	5	Very active
Not at all egotistical	1	2	3	4	5	Very egotistical
Difficult to devote self completely to others	1	2	3	4	5	Easy to devote self completely to others
Very rough	1	2	3	4	5	Very gentle
Not at all helpful to others	1	2	3	4	5	Very helpful to others
Not at all boastful	1	2	3	4	5	Very boastful
Not at all competitive	1	2	3	4	5	Very competitive
Not at all kind	1	2	3	4	5	Very kind
Not at all aware of others' feelings	1	2	3	4	5	Very aware of others' feelings
Can make decisions easily	1	2	3	4	5	Has difficulty making decisions
Not at all greedy	1	2	3	4	5	Very greedy
Gives up easily	1	2	3	4	5	Never gives up
Not at all self-confident	1	2	3	4	5	Very self-confident
Feels very inferior	1	2	3	4	5	Feels very superior
Not at all dictatorial	1	2	3	4	5	Very dictatorial
Not at all understanding of others	1	2	3	4	5	Very understanding of others
Not at all cynical	1	2	3	4	5	Very cynical
Very cold in relations with others	1	2	3	4	5	Very warm in relations with others
Not at all hostile to others	1	2	3	4	5	Very hostile to others
Goes to pieces under pressure	1	2	3	4	5	Stands up well under pressure

Appendix E

Revised Unmitigated Communion Scale (UCS)

Indicate the extent to which you agree or disagree with each statement. Think of the people close to you – friends or family – in responding to each statement.

	Strongly Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Strongly Agree
I <i>always</i> place the needs of others above my own.					
I never find myself getting overly involved in others' problems.*					
For me to be happy, I need others to be happy.					
I worry about how other people get along without me when I am not there.					
I have <i>no</i> trouble getting to sleep at night when other people are upset.*					
It is impossible for me to satisfy my own needs when they interfere with the needs of others.					
I can't say no when someone asks me for help.					
Even when exhausted, I will always help other people.					
I often worry about others' problems.					

* Items are reverse scored.

Appendix F

Interpersonal Adjectives Scale – Revised (IAS-R)

The following is a list of words that are used to describe people's personal characteristics. Please rate how accurately each word describes you as a person.

	Extremely inaccurate	Very inaccurate	Quite inaccurate	Slightly inaccurate	Slightly accurate	Quite accurate	Very accurate	Extremely accurate
Timid (LA)								
Unsympathetic (LC)								
Unauthoritative (LA)								

Note. Sample items from the IAS-R. Adapted and reproduced by special permission of the Publisher, Psychological Assessment Resources, Inc., 16204 North Florida Avenue, Lutz, Florida 33549, from the Interpersonal Adjective Scales by Jerry S. Wiggins, Ph.D., Copyright 1995, by Psychological Assessment Resources, Inc. (PAR). Further reproduction is prohibited without permission of PAR. LA = Lack of Agency; LC = Lack of Communion.

Appendix G

Women's Role Strain Inventory (WRSI)

The following are questions related to the role strain working women may experience. Role strain is the felt difficulty in meeting multiple role obligations (e.g., worker, spouse, mother, caregiver, etc.). Please indicate to what degree you agree or disagree with each of the statements, using the scale provided.

	Strongly Agree	Frequently Agree	Agree	Disagree	Strongly Disagree	N/A
My family/significant others criticize me when I am unable to complete my household chores.						
I am working to please myself.*						
I feel good about working it makes me feel that I am improving myself.*						
I am often tired because of work and it is difficult to handle the strain.						
I feel strain for not having time to do things with my family/significant others.						
My husband/significant other is not emotionally supportive to my work.						
I still participate in community activities that are important to me.*						
Having little personal time does not bother me.*						
I can manage my time for different roles: worker; personal; and family.*						
I have someone who shares the household tasks.*						
I have had more strains/difficult relationships with my family/children since I have been working.						
I seem to be ill more often when I am working.						
My family/friends do not give me emotional support.						
I find myself unable to satisfactorily manage routine household tasks.						
I have no special time for myself since I have worked.						
My personal health is better when I am working.*						
My husband/significant other is emotionally supportive of my work.*						
I am working to please others.						
I am able to manage adequate time for my family/significant others.*						
I have adequate time to complete household tasks.*						
No one contributes to my household tasks which puts a burden on me.						

	Strongly Agree	Frequently Agree	Agree	Disagree	Strongly Disagree	N/A
My significant others decrease my role strain.*						
My family/friends are supportive of me when I am unable to complete my housework.*						
I do not seem to have time for all my roles: worker; personal; and family.						
I find it exhausting to complete my household obligations in addition to working.						
Completing my household and work obligations is not difficult.*						
I feel guilty about eliminating activities at church and in the community.						
I do not have enough personal time.						
I feel pressure from working, it does not make me feel I am improving myself.						
I feel badly that I have eliminated community activities since I have so many obligations.						
I have a satisfactory routine for completing household tasks.*						
My working role does not cause me strain.*						
My significant others increase my role strain.						
My family/significant others do not make me feel guilty for having less time for them.						
I am able to handle the additional strain of working.*						
I have maintained good relationships with my family/children since I have been working.*						
My family/friends give me much emotional support.*						
My family/children do not demand a lot of me when I have to bring work home from my job.*						
I make special time for myself since I have worked.*						
I have maintained my supports in church activities and in the community which helps my strain.*						
I do not have time to complete household tasks.*						
My family/children get much criticism because I am working.						
My working role causes much strain for me.						
My family/children do not decrease their demands on me when I have to bring work home from my job.						

* Items are reverse scored.

Appendix H

IBS Quality of Life Questionnaire (IBS-QOL)

Below you will find statements concerning bowel problems and how they affect you. For each statement, please choose the response that best applies to how you have felt over the **past month (last 30 days)**. If you are unsure about how to respond to a statement, please give the best response you can. Your responses will be kept strictly confidential.

I feel helpless because of my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	Extremely
I am embarrassed by the smell caused by my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	Extremely
I am bothered by how much time I spend on the toilet.	Not at all	Slightly	Moderately	Quite a bit	A great deal
I feel vulnerable to other illnesses because of my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	Extremely
I feel fat because of my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	A great deal
I feel like I'm losing control of my life because of my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	A great deal
I feel my life is less enjoyable because of my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	A great deal
I feel uncomfortable when I talk about my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	Extremely
I feel depressed about my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	Extremely
I feel isolated from others because of my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	Extremely
I have to watch the amount of food I eat because of my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	A great deal
Because of my bowel problems, sexual activity is difficult for me.	Not at all	Slightly	Moderately	Quite a bit	Extremely
I feel angry that I have bowel problems.	Not at all	Slightly	Moderately	Quite a bit	Extremely
I feel like I irritate others because of my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	A great deal
I worry that my bowel problems will get worse.	Not at all	Slightly	Moderately	Quite a bit	A great deal
I feel irritable because of my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	Extremely
I worry that people think I exaggerate my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	A great deal
I feel I get less done because of my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	A great deal
I have to avoid stressful situations because of my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	A great deal
My bowel problems reduce my sexual desire.	Not at all	Slightly	Moderately	Quite a bit	A great deal
My bowel problems limit what I can wear.	Not at all	Slightly	Moderately	Quite a bit	A great deal

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I have to avoid strenuous activity because of my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	A great deal
I have to watch the kind of food I eat because of my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	A great deal
Because of my bowel problems, I have difficulty being around people I do not know well.	Not at all	Slightly	Moderately	Quite a bit	A great deal
I feel sluggish because of my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	Extremely
I feel unclean because of my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	Extremely
Long trips are difficult for me because of my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	Extremely
I feel frustrated that I cannot eat when I want because of my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	Extremely
It is important to be near a toilet because of my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	Extremely
My life revolves around my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	A great deal
I worry about losing control of my bowels.	Not at all	Slightly	Moderately	Quite a bit	A great deal
I fear that I won't be able to have a bowel movement.	Not at all	Slightly	Moderately	Quite a bit	A great deal
My bowel problems are affecting my closest relationships.	Not at all	Slightly	Moderately	Quite a bit	A great deal
I feel that no one understands my bowel problems.	Not at all	Slightly	Moderately	Quite a bit	Extremely

Note. The IBS-QOL was developed by Donald L. Patrick, Ph.D. at The University of Washington, Douglas A. Drossman, MD at The University of North Carolina, Novartis Pharmaceuticals Corporation, and Novartis Pharma AG. Authors hold joint copyright over the IBS-QOL and all its translations. Reproduced with permission. Further reproduction is prohibited without permission. How to obtain the IBS-QOL: Please contact the Information Resources Centre of Mapi Research Trust, 27 rue de la Villette, 69003 Lyon, FRANCE - Tel: +33 (0) 472 13 65 75 - Fax: +33 (0)472 13 66 82 - E-mail: trust@mapi.fr - Internet: www.mapi-trust.org - www.PROQOLID.org.

Appendix I

Positive and Negative Affect Schedule (PANAS)

This scale consists of a number of words that describe different feelings and emotions. For each item, indicate to what extent you have felt this way **during the past week**.

	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
Interested					
Distressed					
Excited					
Upset					
Strong					
Guilty					
Scared					
Hostile					
Enthusiastic					
Proud					
Irritable					
Alert					
Ashamed					
Inspired					
Nervous					
Determined					
Attentive					
Jittery					
Active					
Afraid					

Appendix J

Perceived Stress Scale (PSS)

The questions in this scale ask you about your feelings and thoughts **during the last month**. In each case, please indicate how often you felt or thought a certain way.

	Never	Almost Never	Sometimes	Fairly Often	Very Often
In the last month, how often have you been upset because of something that happened unexpectedly?					
In the last month, how often have you felt that you were unable to control the important things in your life?					
In the last month, how often have you felt nervous and "stressed"?					
In the last month, how often have you felt confident about your ability to handle your personal problems? *					
In the last month, how often have you felt that things were going your way? *					
In the last month, how often have you found that you could not cope with all the things that you had to do?					
In the last month, how often have you been able to control irritations in your life? *					
In the last month, how often have you felt that you were on top of things? *					
In the last month, how often have you been angered because of things that were outside of your control?					
In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?					

* Items are reverse scored.

Appendix K

Rome III IBS Diagnostic Criteria Questionnaire

In the last 3 months, how often did you have discomfort or pain anywhere in your abdomen?

- Never
 Less than one day a month
 One day a month
 Two to three days a month
 One day a week
 More than one day a week
 Every day

Did this discomfort or pain occur only during your menstrual bleeding and not at other times?

- No
 Yes
 Does not apply (e.g., menopause)

Have you had this discomfort or pain 6 months or longer?

- No
 Yes

	Never or rarely	Sometimes	Often	Most of the time	Always
How often did this discomfort or pain get better or stop after you had a bowel movement?					
When this discomfort or pain started, did you have more frequent bowel movements?					
When this discomfort or pain started, did you have less frequent bowel movements?					
When this discomfort or pain started, were your stools (bowel movements) looser?					
When this discomfort or pain started, how often did you have harder stools?					
In the last 3 months, how often did you have hard or lumpy stools?					
In the last 3 months, how often did you have loose, mushy or watery stools?					

Appendix L

IBS and General Health Questionnaire

When did you first have symptoms of IBS or gastrointestinal symptoms (as listed in the questions above)? _____

Have you discussed your IBS/gastrointestinal symptoms with a medical doctor?

Yes No

Have you been diagnosed with IBS by a medical doctor?

Yes No

If you answered **YES** above, please specify who diagnosed your IBS:

- primary care doctor (e.g., family physician, general practitioner, walk-in clinic)
- gastroenterologist
- other: _____

If you have been diagnosed with IBS, please indicate *when* you were diagnosed:

Have you visited a specialist (e.g., gastroenterologist) because of your IBS/gastrointestinal symptoms?

Yes No

Please indicate the type of specialist you saw:

- gastroenterologist
- obstetrician/gynecologist
- other : _____

In the past **3 months**, approximately how many times have you seen a physician for your IBS/gastrointestinal symptoms? _____

In the past **12 months**, approximately how many times have you seen a physician for your IBS/gastrointestinal symptoms? _____

Have you ever spoken to a doctor about your IBS or undiagnosed gastrointestinal symptoms and felt the legitimacy of your symptoms were being questioned? That is, did you ever feel that a doctor downplayed how bothersome your symptoms are to you or questioned whether you in fact have a real medical illness?

Yes No

If **YES**, please elaborate on this experience (as little or as much as you would like to share):

Are you on medication for your IBS/gastrointestinal symptoms?

Yes No

If you answered **YES** above, please indicate the number of medications you are taking for IBS/gastrointestinal symptoms: _____

If you have not been diagnosed with IBS but have frequent gastrointestinal symptoms, are they caused by another medical condition or the side effect of medication?

Yes No Not sure

Please list any chronic health conditions you have been diagnosed with (e.g., high blood pressure, chronic migraines, cancer, liver disease, chronic fatigue syndrome, etc.).

Appendix M

Demographic Questionnaire

These final set of questions ask you to provide general information about yourself.

Age: Sex: Female Male

What is your highest level of education?

did not finish high school some college or university some graduate school
 high school graduate college/university graduate graduate degree

Are you currently employed:

full-time part-time not at all retired disabled

What is your first language? _____

What ethnic background do you most identify with?

- White/European
- Black/African/Caribbean
- Latin/South American
- East Asian/Chinese/Japanese
- South Asian/Indian/Pakistani
- Aboriginal/Metis/First Nations
- Middle Eastern
- Bi/Multiracial
- Other (please specify) _____

What is your relationship status? (please check the one that applies best to you)

- Married/Living with an intimate other
- Separated/Divorced
- Single, never married
- Widowed

What country do you live in? _____

Have you been diagnosed with any psychiatric or mental health conditions? (e.g., depression, anxiety, panic attacks, etc.)

No Yes

If yes, please list all

How many children and teens live with you in your home? _____

How many are:

under 2 years old

2-7 years old

7-12 years old

12-17 years old

Is there anyone age 65 or older living in your home?

No Yes

Which of the following roles do you *currently* identify with?

spouse/partner

parent

employed worker

caregiver for older adult (e.g., parent)

volunteer (e.g., charity, church)

other (please list): _____

This is the end of the survey. Please click below to save your responses and continue to the draw entry form and study explanation.

Appendix N

Survey Introduction

Factors Related to Quality of Life Among Women With Irritable Bowel Syndrome

Welcome! My name is Sabrina Voci and I am a graduate student in the Applied Social Psychology program at the University of Windsor. I am conducting a study for my master's thesis that is exploring factors that may be related to quality of life and well-being among women with Irritable Bowel Syndrome (IBS). This study is being supervised by Dr. Ken Cramer and has been approved by the University of Windsor Research Ethics Board.

We are looking for participation from women who are employed (part-time or full-time) that have either:

- **been diagnosed with IBS, or**
- **have experienced abdominal pain or discomfort with increased or decreased frequency of bowel movements, beginning at least 6 months ago and recurring in the past 3 months, not caused by either a medical condition or the side effects of medication.**

If you volunteer to participate in this study, we would ask you to complete an online survey. Before beginning the survey you will be asked to enter a personal password which will give you the option during the survey to save your responses and return at a later time or date to complete the survey by re-entering this password.

After you complete the survey, you will be given the opportunity to enter a draw for 1 of 5 Amazon or Chapters Indigo gift certificates valued at \$25 CAD (or 23 USD, 18 EUR, or 12 GBP if you live outside of Canada). In order to enter the draw you will be asked to provide an e-mail address that will be used solely for the purpose of contacting the winner. Your e-mail address will **not** be linked to your survey responses.

If you know any women that you think may be interested in participating in this study please feel free to forward the website address to them: www.uwindsor.ca/healthsurvey.

Thank you very much for helping with this study.

To learn more about the study and decide whether you wish to participate, click here to enter the group username and password.

If you do not know the group username and password, contact Sabrina at health@uwindsor.ca

To return to a survey you have already started, click here to enter your personal password on the next page.

Appendix O

Letter of Information



LETTER OF INFORMATION FOR CONSENT TO PARTICIPATE IN RESEARCH

Title of Study: Factors Related to Quality of Life Among Women With Irritable Bowel Syndrome

You are asked to participate in a research study conducted by Sabrina Voci (graduate student) and Dr. Ken Cramer (faculty supervisor), from the Department of Psychology at the University of Windsor. The study is being conducted in fulfilment of Sabrina Voci's master's thesis requirements.

If you have any questions or concerns about the research, please feel free to contact Sabrina Voci at health@uwindsor.ca, or Dr. Cramer at (519) 253-3000 ext. 2239, kcramer@uwindsor.ca.

PURPOSE OF THE STUDY

The purpose of this study is to investigate factors that may be related to quality of life and well-being among women living with irritable bowel syndrome (IBS). We are interested in examining these factors both among women who have never seen a doctor for their gastrointestinal symptoms and among women who have sought medical attention and have received a diagnosis of IBS.

PROCEDURES

If you volunteer to participate in this study, we would ask you to complete an online survey. The online survey includes questions about your self-perceptions, social relationships, your experience managing work and other demands, your illness experiences, health, and well-being, and general demographic and background information.

The survey should take approximately 40 minutes to complete. Before you begin the survey you will be asked to create a personal password which will give you the option of saving your survey responses and returning at a later time or date to finish the survey.

POTENTIAL RISKS AND DISCOMFORTS

There are no serious anticipated risks associated with participating in this study. Some people may experience mild distress or discomfort as they focus on issues surrounding their health and illness.

POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

Your participation in this study will help generate a better understanding of which factors are associated with better quality of life and well-being among women with irritable bowel syndrome and possibly other functional gastrointestinal disorders. This knowledge may also be used to improve education and treatment programs for people with IBS in the future.

PAYMENT FOR PARTICIPATION

After you complete the survey, you will be given the opportunity to enter a draw for 1 of 5 Amazon or Chapters Indigo gift certificates valued at \$25 CAD (or 23 USD, 18 EUR, or 12 GBP if you live outside of Canada). In order to enter the draw you will be asked to provide an e-mail address that will be used solely for the purpose of contacting the winner. Your e-mail address will **not** be linked to your survey responses.

CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission. The survey is hosted on a secure website and only the researchers will have access to the survey responses. The survey does *not* include any questions which ask you to provide identifying information such as your name. Survey data will be stored in a secure location accessible only to the researchers directly involved in the study. Providing your e-mail address for the draw is voluntary and your e-mail address will not be linked to your survey responses. As well, anything containing personal information, such as e-mails to the researchers or draw entries will be stored in a place that is secure. Any reports on the findings of this study will contain information that reflects group results and not information about specific individuals in order to protect your confidentiality. Any data that is disposed of will be done so in a secure manner.

PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. If you choose to withdraw from the study you will still be given the opportunity to enter the draw. You may also refuse to answer any questions you do not want to answer and still remain in the study. The investigator may withdraw you from this research if circumstances arise which warrant doing so. You have the option of removing your data from the study should you decide to do so.

FEEDBACK OF THE RESULTS OF THIS STUDY TO THE PARTICIPANTS

A brief report of the findings of this study will be made available online at www.uwindsor.ca/healthsurvey after completion of the study by December 2007.

SUBSEQUENT USE OF DATA

By completing and submitting the survey you agree that this data can be used in subsequent studies.

RIGHTS OF RESEARCH PARTICIPANTS

You may withdraw your consent at any time and discontinue participation without penalty. If you have questions regarding your rights as a research subject, contact: Mark Curran, Research Ethics Coordinator, Office of the Research Ethics Board, University of Windsor, 519-253-3000 ext. 3948; e-mail: ethics@uwindsor.ca.

SIGNATURE OF INVESTIGATOR

These are the terms under which I will conduct research.

Sabrina Voci

July 12, 2007

You may print out a copy of this letter of information for your records.

To acknowledge that you have read and understood this information and agree to participate in this study, click on 'I agree to participate' below. If you do not wish to participate, click on 'I do not wish to participate' to exit the survey.

I agree to participate

I do not wish to participate

Appendix P

Survey Instructions

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY:

This survey is a multi-page survey. At the end of each page you will have three options:

- (1) **Save and Continue** will save your responses and send you to the next page of the survey.
- (2) **Save and Close** will save your responses and exit the survey. Below you will be asked to create a personal password so that we can link your responses from each visit. To return to the survey, go to www.uwindsor.ca/healthsurvey and follow the link at the bottom of the page.
- (3) **Quit Survey** will exit the survey without saving your responses, withdrawing you from the study. You will be directed to the draw entry form and an explanation of the study.

Please enter your personal password here:

Your password must be **6-8 characters (letters and numbers only, with no spaces)**.

We recommend that you write your password down so that you do not forget it.

Save & Continue

Appendix Q

Draw Entry Form

If you wish to be entered into a draw for 1 of 5 \$25 CAD (or 23 USD, 18 EUR, or 12 GBP) gift certificates for Amazon or Chapters Indigo, please provide an e-mail address at which you can be contacted if you win.

Please be assured that your e-mail address will only be used to contact the winners and will not be linked to your survey responses.

E-mail address:

Good luck!!

Submit

**I do not wish to enter the draw.
Skip to explanation of study.**

Appendix R

Debriefing Statement

Study Explanation

The overall purpose of the current study is to examine factors that may be related to quality of life and well-being among women with irritable bowel syndrome.

Approximately 10–20% of the general population have irritable bowel syndrome (IBS). The most common symptoms of IBS are abdominal pain, bloating, constipation, and diarrhea. IBS is more common among women than men. For some people, IBS can be disabling. For example, symptoms may leave some individuals unable to work, attend social events, or travel. Both the symptoms themselves and their negative impact may cause individuals with IBS to become more socially isolated, depressed, and anxious. However, for some people IBS does not interfere with their daily lives and they are able to manage symptoms. In fact, approximately 27% of people who meet criteria for IBS never seek medical attention for their symptoms. Because not everyone who meets criteria for IBS has seen a doctor and been diagnosed, we also invited women who have gastrointestinal symptoms consistent with IBS to participate in our study. One set of questions we asked you were included to determine whether your symptoms are consistent with the current criteria for IBS.

While the underlying cause of IBS is not yet known, both physiological and psychosocial factors are believed to play a part in both the initial onset of IBS and the quality of life of individuals who have IBS. The first goal of the current study was to examine a set of characteristics that in general reflect how much someone focuses on themselves versus others. Because of differences in socialization during childhood and differing social roles, men and women tend to differ on these characteristics. For example, women are more likely to describe themselves as nurturing and sympathetic, which are characteristics that reflect a greater focus on others and maintaining relationships. While many of these characteristics are positive and adaptive, some may have a negative impact on both psychological well-being and physical health. For example, some women focus on relationships to such an extent that they fail to take care of their own needs and this may lead to depression and not seeking medical help for health problems. The current study asked you to rate yourself on a variety of these characteristics so that we can determine whether they are related to quality of life among women with irritable bowel syndrome.

The second purpose of the current study was to see if these same characteristics are related to the strain caused by the demands of multiple roles such as being a mother, worker, wife, etc. In turn, we wish to examine whether this strain is related to lower quality of life among women with IBS.

We hope the findings from the current study will contribute to a better understanding of IBS and may eventually be incorporated into programs to help women with IBS manage symptoms and improve their quality of life. You may return to this website in December 2007 for a report of the findings of this study.

If you would like to learn more about irritable bowel syndrome, you may visit the following websites:

- International Foundation for Functional Gastrointestinal Disorders (IFFGD):
<http://www.aboutibs.org/>
- National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health:
<http://digestive.niddk.nih.gov/ddiseases/pubs/ibs/ibs.pdf>

Thank you for your participation!

Sabrina Voci
Department of Psychology
University of Windsor

Please pass on this website address (www.uwindsor.ca/healthsurvey) to other women you know who have IBS or undiagnosed gastrointestinal symptoms who might be interested in completing the survey. Thank you!

VITA AUCTORIS

Sabrina Concetta Voci was born in 1977 in Toronto, Ontario. She graduated from Holy Cross Catholic High School (Woodbridge, Ontario) in 1996. Subsequently, she obtained an Honours Bachelor of Science in Psychology from the University of Toronto (Toronto, Ontario) in 2001. She completed a Master of Arts in Applied Social Psychology at the University of Windsor (Windsor, Ontario) in 2007.