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The Role of Social Support and Emotional Representations in Health Outcomes for Individuals with Chronic Illness

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The Role of Social Support and Emotional Representations in Health Outcomes for
Individuals with Chronic Illness

by

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Abstract

Health related outcomes for individuals with chronic symptoms of illness can be influenced by complex, socio-emotional processes. The primary interest of this study was to determine whether perceived social support lessens the negative emotional appraisals of illness experience (e.g. anger, fear, hostile interpretations of illness), and the role of these emotional appraisals in health outcomes for those diagnosed either with a conventional chronic illness (e.g. diabetes, arthritis, chronic obstructive pulmonary disease) or a functional somatic syndrome (e.g. fibromyalgia, chronic fatigue syndrome, irritable bowel). Data for this study were collected from a series of four surveys administered online, which included measures of perceived social support (MSPSS), emotional representations of illness (IPQ-R), and health outcomes (SF-36). The sample included 151 participants (129 Female, 22 Male), all of whom experienced chronic somatic symptoms for at least 3 months, with 57 classified as having a conventional diagnosis (CD) and 94 with a functional somatic syndrome (FSS). The results suggest a potential mechanism for the buffering effect of social support, such that those with higher levels of social support reported lower degrees of emotional representations. After controlling for demographic and illness-related variables, social support was a significant predictor of emotional representations of illness. Emotional appraisals of physical symptoms predicted a majority of the health dimensions of the SF-36; including social functioning, role limitations due to physical problems and emotional problems, emotional well-being, vitality, and overall perception of general health. The pattern of findings underscores the need to consider the influence of psychosocial processes on both psychological and physical well-being in populations adjusting to chronic illness.

The Role of Social Support and Emotional Representations in Health Outcomes for Individuals with Chronic Illness

An important task of psychological research within the health domain is to identify the nuances of the interrelationships between psychosocial processes, behavior, and health. For individuals with chronic symptoms of illness, the interplay between their social environment, emotion, and behavior can be increasingly significant as they learn to cope with the sustained nature of their physical symptoms. Social relationships may affect health by regulating an individual's thoughts, feelings, and behaviors in ways that promote health (House, Landis, & Umberson, 1988). There has been a significant amount of literature published examining the relationship between social support and health relevant cognitions and affect in the etiology of physical disease (Huxhold, Fiori, & Windsor, 2012; Uchino, 2004; Cohen, 1988). The reduction of negative affect produced by appraisal of illness experience is presumed to influence health outcomes by reducing negative health behaviors and physiological reactivity (Uchino, 2006; Cohen & Wills, 1985). Individuals construe emotional appraisals of illness threats, which may be characterized as emotional distress (e.g. fear, anger, anxiety), in order to make sense of their personal experience of illness (Leventhal, 1984). Social support may attenuate emotional distress caused by illness experience by bolstering an individual's perceived ability to cope with the demands imposed by physical symptoms. Furthermore, social support may alleviate the impact of negative emotional appraisal, by providing solutions to the problem, promoting healthful behaviors, or by decreasing the body's potentially harmful response to stress (Taylor, 2007; Cohen, 1988). While the influence of social support on physical health has been well documented, the mechanisms by which social support operates have yet to be elucidated (Uchino, 2006).

Within the context of chronic illness, a link between cognitive-emotional factors (most notably, depression, hopelessness, and hostility) and health outcomes has been observed (Gallo & Matthews, 2003). Previous illness representation research has found an association between personal beliefs of illness, emotional representations, and various measures of well-being, when emotional representations were examined as an outcome (Jopson & Moss-Morris, 2003). While many links have been established between other cognitive appraisals of illness and health outcomes, an important link between emotional appraisals and health may still exist (Hagger & Orbell, 2003).

Chronic Illness

Over the last half of the century, there has been a steady increase in the incidence and prevalence of chronic illness conditions. It was estimated that in 2005, approximately 45% of the American population had one or more chronic conditions (Kung, Hoyert, Xu, & Murphy, 2008). Due to various factors such as increased life expectancy, the aging of society, and advances in medical care, it is estimated that the population of individuals with chronic conditions will continue to increase steadily (Wu & Green, 2000). Chronic illness is a growing problem and is now the leading cause of disability and death, and the growing prevalence of chronic illness is believed to be a major factor in the increase in total health care expenditures in the United States (Hoffman, Rice, & Sung, 1996; Decker, Schappert, & Sisk, 2009).

The sustained nature of chronic illness is not only a burden in terms of financial costs (Vogeli, Shields, Lee, Gibson, Marder, Weiss, & Blumenthal, 2007), but can also have a multidimensional impact, impacting individuals both physically and within social contexts (Hwu, 1995). The disruption of chronic illness to a person's physical self can alter their self-worth or confidence which may have an effect on social responses and relationships. This impact on

social interactions may in-turn influence the individual's experience with chronic illness (Bury, 1991). At a time when an individual is adjusting to the impact of chronic illness on their daily life, social support may influence factors which contribute to physical health. Shaw and colleagues (2004) found an association between emotional support and psychological factors such as personal control, self-esteem, and self-efficacy, and found these factors to be determinants of both mental and physical health.

It is important to consider the type of chronic illness when investigating the role of certain psychosocial processes in predicting health and well-being. For instance, those with a conventional diagnosis (CD), or a diagnosis with a distinct structural pathology and known etiology of symptoms, may have a similar or different personal experience of their illness than those with a functional somatic syndrome (FSS), or a diagnosis with an indistinct pathology or unknown etiology. For example, in a recent review, Moss-Morris and Wrapson (2003) suggested patients with a FSS may have illness representations which differentiates them from patients with other chronic illness. Those with a FSS tend to view their illness as serious and chronic and avoid activity to keep the illness under control. Those with a FSS also have been shown to report greater levels of perceived stigma than those with a CD (Looper & Kirmayer, 2004). However, other personal beliefs, such as the controllability of the illness and symptoms are equivalent for those with a FSS or CD (Moss-Morris & Wrapson, 2003). Thus, when examining the role of social support and emotional appraisals in health outcomes, it is necessary to consider the differences and similarities in illness experience for those with a FSS or CD.

Social Support

Social support may operate in a complex way, affecting health in both direct and indirect ways by regulating psychological, behavioral, and biological processes (Schwarzer & Leppin,

1991). The specific mechanisms or major pathways through which social support influences health are inconclusive (Uchino, 2006). One pathway through which social support can promote health is by facilitating healthy behaviors, such as exercise, eating a balanced diet, and adhering to medical regimens (Lewis & Rook, 1999; Dimatteo, 2004). Another pathway, relevant to the current investigation, involves psychological processes, such as appraisals, emotions, or feelings of control (Cohen, 1988).

In reviews of the social support literature, it has been suggested that perceived support buffers the psychological impact of negative events and chronic strains (Taylor, 2007; Thoits, 1995). The sustained nature of chronic illness may lead to negative or maladaptive appraisals of illness experience. Common responses to chronic strains have been marked by feelings of helplessness and loss of esteem due to a perceived inability to manage situational demands. Within the context of illness, these maladaptive responses have been linked to disruptions of the neuroendocrine and immune system functioning and negative health-related behaviors (Cohen & Wills, 1985). The perception that others can and will provide the necessary resources may attenuate or prevent the emotional response to a stressful experience, such as chronic illness. Therefore, emotional appraisals or interpretation of illness experience may be a mechanism through which social support influences an individual's health and well-being. A major tenet of Leventhal's Self-Regulation Theory (1984) is that illness representations, including both cognitive and emotional appraisals, are imbedded within a personal and social context, such that social networks may help to buffer the emotional distress caused by the illness (Baumann, 2003).

Researchers have previously identified associations between social support and various health outcomes such as cardiovascular disease mortality (Brummett, Barefoot, Siegler, Clapp-Channing, Lytle, Bosworth, Williams, & Mark, 2001), infectious disease mortality (Lee &

Rotheram-Borus, 2001), and immune function (Kiecolt-Glaser, Garner, Speicher, Penn, Holliday, & Glaser, 1984). For those with chronic illness, higher levels of social support have been linked to decreased rates of depression (Primomo, Yates, & Woods, 1990) and to positively affect chronic illness self-management (Gallant, 2003). For those with a functional somatic syndrome (i.e., fibromyalgia), social support has been shown to influence pain processing at the subjective behavioral level as well as the central nervous system level (Montoya et al., 2004). Also, social support has been shown to be associated with less functional impairment (Heijmans, de Ridder, & Bensing, 1999), less aggravation with symptoms after a stressful event (Lutgendorf, Antoni, Ironson, Fletcher, Penedo, & Baum, 1995), and even improvement in health for individuals with chronic fatigue syndrome (Saltzstein, Wyshak, Hubbuch, & Perry, 1998). However, in these studies, specifically how and why social support influenced health outcomes were not examined.

Illness and Emotional Representations

After encountering a stressful situation, social support may help individuals alter the meaning of the situation, the individual's emotional or behavioral response, or the situation itself (Thoits, 1995). Leventhal's Self-Regulation Theory (1984) establishes a framework to understand the factors that influence how individuals perceive threats of illness and how these perceptions influence decisions to perform self-regulation behavior which may lead to better health outcomes. One way individuals account for these perceptions of illness threats are through illness representations; including dimensions of identity, cause, timeline, controllability, consequences, emotional representations, and coping (Moss-Morris, Petrie, & Weinman, 2002). Illness threats and illness-related factors (e.g. physical symptoms, diagnosis, etc.) elicit both cognitive and emotional representations. Individuals actively construct illness representations

and these representations generate goals for self-management, procedures for goal attainment, and evaluating self-efficacy (Leventhal, Brissette, & Leventhal, 2003).

Emotional representations are appraisals characterized specifically as emotional distress (e.g. fear, anger, anxiety) caused by an illness. Cognitive and emotional appraisals of illness threats are parallel and interactive processes involved in self-regulation. For example, illness threats are represented at an abstract, rational level, such that an individual may view their high cholesterol as a risk factor for heart disease. Illness threats are also represented at a concrete, impulsive level, such that memories of a relative's heart attack may elicit feelings of fear and anxiety as an individual reflects on their own experience of symptoms of chest pain or fatigue. If objective threats are viewed as unmanageable, potentially in the case of chronic illness, emotional regulation may be the primary mechanism used to manage health threats (Cameron & Leventhal, 1995).

The Illness Perception Questionnaire (Weinman, Petrie, Moss-Morris, & Horne, 1996), the original measure of the components of Leventhal's Self-regulation Theory (1984), overlooked the role of emotional representations. Thus, the role of emotional representations in health outcomes has not been examined in much of the published literature on illness representations (Hagger & Orbell, 2003). Moss-Morris and colleagues (2001) suggested that emotional representations must be considered in order to thoroughly describe an individual's response to illness, as they are closely related to cognitive representations which were found to predict levels of disability, fatigue, and emotional distress. The predictive nature of emotional representations of illness in certain aspects of health and well-being has been demonstrated for individuals recovering from acute illness and healthy individuals. Broadbent and colleagues (2006) found emotional responses to illness were a significant predictor of both mental and

physical functioning for individuals recovering from a heart attack. In a study of healthy individuals, Figueriras and Alves (2006) determined that emotional representations of illness were a particularly important aspect of the way individuals perceived the nature of serious illness, and emphasized the need for further investigation into the role of emotional representations.

For individuals with chronic illness, it can be especially difficult for individuals to understand their illness as they begin to adjust to the enduring nature of prolonged physical symptoms. Individuals with chronic illness may be more severely impacted by changes in psychological functioning than by physical functioning (Hwu, 1995). Therefore, examining the emotional component of a larger self-regulatory system may emphasize the role of emotional appraisals in predicting psychological and physical outcomes. In the social domain, better emotion regulation has been associated with greater social engagement and connectedness (Kok & Fredrickson, 2003), better marriage quality (Smith, Cribbet, Nealey-Moore, Uchino, Williams, & Thayer, 2011), and a more secure attachment style (Diamond & Hicks, 2005). Furthermore, extended separation between married partners was associated with increased negative emotions and various behavioral and psychological stress responses (Vormbrock, 1993). People are embedded in social networks and it may be necessary to understand the role of emotional appraisals within the context of social relationships, especially for those with chronic illness.

The predictive power of emotional representations of illness for specific health outcomes has been investigated in a limited number of empirical studies (Kaptein, Scharloo, Helder, Kleijn, van Korlaar, & Woertman, 2003). For patients with osteoarthritis, a lower degree of reported emotional representations was associated with better physical functioning and less limitations in activities (Botha-Scheepers, Ryazi, Kroon, Scharloo, Houwing-Duistermaat,

Slagboom, Rosendaal, Breedveld, & Kloppenburg, 2006). Evidence suggests the cognitive representations of patients with a functional somatic syndrome contain strong illness identity, they tend to see their illness as serious and chronic, and their affective responses are tied to embarrassment or fear of overexertion (Kaptein et al., 2003). What is less known is how emotional representations impact physical health and other measures of well-being across various chronic illness conditions.

Social Support, Emotional Representations, and Health Outcomes

The purpose of this study was to examine whether social support lessens the emotional representations of illness experience and the role of these emotional representations in predicting health outcomes for individuals with chronic symptoms of illness, including those with a conventional diagnosis (CD) or a functional somatic syndrome (FSS).

Hypotheses. In regards to social support, it was expected that those with higher levels of perceived social support would report lower degrees of emotional representations of their illness. Social support was expected to be a predictor of emotional representations. Based on the self-regulatory model and the findings from previous studies which demonstrated the predictive role of emotional responses in mental and physical functioning, it was expected that emotional representations would predict health outcomes in the functional status, well-being, and general health domains.

Method

Data were gathered from participant responses to four surveys designed to capture various aspects of personal experience with chronic illness. This series of surveys constitutes the VOICE (verification of illness, coping, and experience) study. The surveys examine four different aspects of illness experience; personal views of physical symptoms, coping with

symptoms, relationships with others and support, and impact of illness. The four surveys were open to all consenting adults who reported recurrent physical symptoms for duration of at least three months. The data used for analysis excluded participants with primary diagnoses of psychiatric or affective disorders such as depression, generalized anxiety disorder, or somatization disorder. Data from participants who listed more than one primary diagnoses or who did not complete all four surveys were also excluded.

Participants

Illness Classifications. Participants were categorized, according to their illness type and symptom conditions, as either having a conventional diagnosis (CD) or a functional somatic syndrome (FSS). Based on categorizations and criterion found in the literature (Henningen, Zipfel, & Herzog, 2007; Wessley, Nimnuan, & Sharpe, 1999), illnesses with distinct structural pathology, a known etiology, and a well-established criteria were categorized as a CD (N = 57). Illnesses with indistinct structural pathology, an unknown etiology, and emerging or conflicting criteria were categorized as a FSS (N = 94). Participants represented 47 chronic illnesses and conditions (see Table 1 and Table 2). Of the illnesses represented, fibromyalgia (N = 45) was the most frequently reported, followed by Restless Leg Syndrome (N = 15), and Chronic Fatigue Syndrome/CFIDS (N = 15).

Table 1. Number of Participants with Reported Conventional Diagnoses.

<i>Illness Name</i>	<i>n</i>	<i>Illness Name</i>	<i>n</i>
Adrenal Cancer	1	Interstitial Cystitis	1
Ankylosing Spondylitis	3	Lyme Disease	3
Arthritis	1	Macular Degenerative	1
Behcet's Disease	1	Meniere's Disease	5
Chiari Malformation Type 1	1	Osteoarthritis	2
COPD ^a	1	Pernicious Anemia	1
CRPS ^b	5	Postpolio Syndrome	1
Crohn's Disease	1	Pudendal Neuralgia	2
Diabetes Insipidus	1	Rheumatoid Arthritis	5
Diabetes Mellitus	1	Sarcoidosis	5
Dysautonomia	1	Scleroderma	1
Eczema/Dermatitis	1	Sjorgren's Disease	1
Ehlers Danlos Syndrome	3	SOD ^d	1
Endometriosis	1	Spondylitis	1
Epstein Barr Virus (EBV)	1	Stiff Person Syndrome	1
Grave's Disease	1	TMJ ^c	1
Hypothyroidism	1		

^aChronic Obstructive Pulmonary Disease

^bComplex Regional Pain Syndrome

^cTemporomandibular Joint Dysfunction

^dSphincter of Oddi Dysfunction

Table 2. Number of Participants with Reported Functional Somatic Syndromes.

<i>Illness Name</i>	<i>n</i>
Atypical Facial Pain	1
CFIDS ^a	5
Chronic Fatigue Syndrome (CFS)	9
Chronic Low Back Pain	4
Delusional Parasitosis	2
Fibromyalgia	45
Gulf War Syndrome	1
Insomnia	1
Irritable Bowel Syndrome	3
Morgellon's Disease	4
Multiple Chemical Sensitivity	2
Myofacial Pain Syndrome	2
Restless Leg Syndrome	14
Sick Building Syndrome	1

^aChronic Fatigue Immune Dysfunction Syndrome

Demographics. The sample consisted of 151 participants (129 female, 22 male). The average age of participants was 46.54 years ($SD = 12.87$) and 94% of participants reported experiencing recurrent symptoms for over one year. A majority (73%) of the participants reported being in a committed relationship; either married, cohabitating, or in a stable relationship). One third (33%) of the participants reported earning between \$20,000 and \$50,000 annually and 93% of participants were White/Caucasian. Though the illness groups were not evenly divided (the greatest amount of participants being classified in FSS group), their demographic characteristics were similar. Cross tabulations using chi-square tests showed no significant differences among illness groups in demographic variables at the .05 level (See Table 3 for demographic information for CD and FSS groups).

Table 3. Demographics by Illness Group.

	<i>Conventional Diagnoses</i>	<i>Functional Somatic Syndromes</i>
<i>Number of Participants</i>	57	94
<i>Gender</i>	47 female, 10 male	82 female, 12 male
<i>Mean Age</i>	45.2 years ($SD = 12.8$)	47.27 years ($SD = 12.9$)
<i>Illness Duration</i>	52 reported symptoms over 1 year ($M = 12.1$ years, $SD = 10.4$)	95 reported symptoms over 1 year ($M = 14.1$ years, $SD = 13.1$)
<i>Annual Income</i>	15 in less than \$20,000 bracket 19 in \$20,000-\$50,000 bracket 15 in \$50,000-\$100,000 bracket	26 in less than \$20,000 bracket 31 in \$20,000-\$50,000 bracket 24 in \$50,000-\$100,000 bracket
<i>Relationship Status</i>	35 in a relationship or married 6 divorced or widowed 6 single	70 in relationship or married 14 divorced or widowed 10 single
<i>Race/Ethnicity</i>	52 White/Caucasian	89 White/Caucasian

Procedure

Recruitment. Participants were recruited through online postings to discussion boards and forums of illness support groups from websites based primarily in the United States. Online recruitment notices adhered to particular web community guidelines and were approved by the webmasters of each website before being posted. The notices contained information describing the VOICE study and directed participants to the online surveys. To ensure a representative sample as possible, online notices were posted on discussion boards and forums for a wide range of chronic illness conditions. Recruitment efforts succeeded in initially gathering as many as 300 participants for one survey. It was necessary for participants to complete all four surveys in order to use their responses in the final analyses. If the participants completed at least one survey and consented to be contacted via email, an email requesting the completion of the surveys was sent within 6 months of the initial participation in the study. Data were not used from participants reporting physical symptoms for less than three months, more than one primary diagnosis or a primary diagnosis of a psychiatric or affective disorder. Also, data were not used from participants without a reported diagnosis, with medically unexplained symptoms, or from those who did not consent to completing the study. Therefore, due to attrition and the aforementioned factors, approximately 40% of participant responses were not included in the analyses of this study.

Measures. The four surveys in the VOICE study included multiple measures, including those that measure social relationships and support, illness perceptions, quality of life, and coping strategies. However, the measures relevant to the analysis of this study will be discussed. The measures of primary interest to this study assessed perceived social support, emotional appraisals of illness, and health outcomes. Measures that assessed health-related factors that

could be associated with the variables of primary interest (e.g. depression, anxiety, negative affect, symptom length, amount of symptoms related to illness, and symptom severity) were also included.

Relationships with others and social support. Perceived social support was measured using the Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet, Dahlem, Zimet, & Farley, 1988). The MSPSS has demonstrated good internal consistency with a Cronbach $\alpha = .88$ (Zimet et al., 1988). Participants who completed the MSPSS indicated their agreement with items (e.g. “I get the emotional help and support I need from my family”) on a 7-point Likert-type scale, ranging from *very strongly disagree* to *very strongly agree*. Scores from the 12 item scale ranged from 1 to 7, with higher scores suggesting greater levels of perceived social support.

Illness perceptions and emotional representations. Emotional illness representations were measured using the Revised Illness Representations Questionnaire (IPQ-R) with modifications. Revised from the Illness Perception Questionnaire developed by Weinman and colleagues (1996), the IPQ-R includes the emotional representation component of illness experience. Moss-Morris and colleagues (2002) included the emotional representations subscale to measure the emotional response to illness, which is an important component of Leventhal’s self-regulatory model of illness representations. Factor analyses of the emotional subscale of the IPQ-R indicated good internal reliability and validity, with Cronbach $\alpha = .88$ (Moss-Morris, et al., 2002). Participants indicated their agreement with items (e.g. “I get depressed when I think about my <specific condition>”) on a 5-point Likert-type scale, ranging from *strongly disagree* to *strongly agree*. Scores from the 6 item scale ranged from 1 to 5, with higher scores suggesting higher degrees of emotional responses generated by the illness.

General health outcomes and specific dimensions of health. Health outcomes were measured using the SF-36 Health Survey Manual and Interpretation Guide (Ware, Kosinski, & Gandek, 2004), which measures health on eight dimensions covering functional status, well-being, and overall health evaluation. In a psychometric evaluation of the SF-36, Gandek and colleagues (2004) determined each health dimension scale to have strong validity and internal consistency (all Cronbach α > .70). Reliability estimates of each dimension of health for the current sample are included in Table 4. The number of possible responses per item ranges from two to six. For example, for an item assessing physical functioning, participants were asked to indicate the extent to which their health limited them from certain activities (e.g. climbing one flight of stairs) ranging from *yes, a lot limited* to *no, not at all limited*. Each dimension is scored on a scale of 0 to 100, with higher scores indicating better health.

Table 4. Reliability of the Dimensions of the SF-36 Health Survey Questionnaire.

<i>Area</i>	<i>Dimensions</i>	<i>Number of questions</i>	<i>Reliability</i>
<i>Functional status</i>	Physical functioning	10	Cronbach α = .92
	Social functioning	2	Cronbach α = .86
	Role limitations (physical problems)	4	Cronbach α = .91
	Role limitations (emotional problems)	3	Cronbach α = .88
<i>Well-being</i>	Emotional well-being	5	Cronbach α = .78
	Vitality (energy/fatigue)	4	Cronbach α = .83
	Pain	2	Cronbach α = .87
<i>Overall evaluation of health</i>	General health perception	5	Cronbach α = .70

Symptom length, count, and severity. Symptom length was assessed using participant responses to the question; “For how long have you had these persistent or intermittent physical symptoms?” Participants indicated whether they have had their physical symptoms for *3 months to 6 months, over 6 months to 1 year, or more than 1 year*. If participants indicated they have

had their physical symptoms for more than 1 year, they were also able to specify the number of years.

Specific symptom count was assessed using a symptom checklist including 63 symptoms ranging from *neck pain* to *impaired coordination or balance*. Participants selected the symptoms they believed were related to their specific illness or condition. Symptom severity was assessed using participant responses to the question; “To what degree are you now experiencing your persistent or intermittent physical symptoms?” Participants indicated their degree of experience on a 5-point Likert-type scale ranging from *not at all* to *extremely*.

Results

Statistical analyses were conducted using multivariate tests, correlational coefficients, and hierarchical linear regression in order to test the relationship between social support, emotional representations, and health outcomes. For the Analyses of Variance (ANOVAs), Levene’s test for equality showed homogeneity of variances (all $ps > .05$). For the hierarchical linear regression analyses, scatterplots of residual values did not indicate violations in linearity or homoscedasticity. Alpha levels for all analyses conducted were set at $\alpha = .05$. As a result of missing data for specific items or measures, the number of participant responses for some items is less than the total participant count in the sample of 151.

Socio-demographic and Health Variables

Analyses of Variance were conducted to test for group differences and compare means for categorical demographic variables (ethnicity, education, household income, gender, relationship status, and employment status, and illness group) on emotional representations, social support, and general health. Males reported a higher degree of emotional representations of illness ($M = 3.90$, $SD = .784$) than did females ($M = 3.37$, $SD = .891$), $F(2, 148) = 3.37$, $p <$

.05). Although those who are not in a committed relationship reported a reasonable level of perceived social support ($M = 3.95$, $SD = 1.32$), those who are in a committed relationship reported a higher level of perceived social support ($M = 4.82$, $SD = 1.40$), $F(1, 150) = 12.4$, $p < .001$. Therefore, gender and relationship status were used as covariates in the hierarchical linear regression analyses. No other socio-demographic group differences were significant in reported emotional representations, perceived social support, or general health ($ps > .05$). All means and standard deviations are reported in Table 5.

Table 5. Average Emotional Representations, Social Support, and General Health by Socio-demographic Variables.

Variable	n	Emotional Representations		Social Support		General Health (SF-36)	
		M	SD	M	SD	M	SD
<i>Ethnicity</i>		NS		NS		NS	
White	140	3.45	.904	4.60	1.43	52.2	9.27
Other/Multiple	11	3.47	.729	4.57	.980	46.0	7.18
<i>Education</i>		NS		NS		NS	
High school or less	6	3.56	1.08	3.90	1.12	47.5	5.24
High school graduate	9	3.44	.646	4.54	.962	53.9	10.2
Some college	55	3.38	.882	4.53	1.51	50.1	9.51
Associates degree	19	3.14	.991	4.51	1.53	51.4	10.8
Bachelor's degree	30	3.52	.989	4.71	1.40	53.0	7.63
Post college graduate	34	3.69	.830	4.78	1.31	54.2	9.26
<i>Household Income</i>		NS		NS		NS	
<\$20,000	40	3.41	.951	4.49	1.41	51.3	8.82
\$20,000 - \$50,000	51	3.50	.892	4.38	1.38	50.5	9.03
\$50,000 - \$100,000	40	3.40	.873	4.66	1.52	53.8	10.2
>\$100,000	19	3.48	.714	5.20	1.10	52.9	9.18
<i>Gender</i>		$p < .05^*$		NS		NS	
Male	24	3.90	.784	4.59	1.42	51.5	9.83
Female	129	3.37	.891	4.60	1.26	51.7	8.86
<i>Committed Relationship</i>		NS		$p < .001^{**}$		NS	
Yes	114	3.48	.898	4.82	1.40	51.6	9.57
No	40	3.38	.845	3.95	1.32	52.7	8.30
<i>Employment Status</i>		NS		NS		NS	
Employed	48	3.62	.783	4.58	1.20	52.0	10.0
Unemployed due to health reasons	53	3.37	.914	4.73	1.60	52.7	9.26
Student	8	2.75	.859	4.78	.967	50.6	9.04
Retired	14	3.68	.811	4.43	1.56	52.5	8.27
Unemployed/Other	30	3.41	.959	4.37	1.30	50.6	8.63
<i>Illness Group</i>		NS		NS		NS	
Functional somatic syndrome	94	3.46	.868	4.59	1.34	51.7	9.24
Conventional diagnosis	57	3.43	.932	4.58	1.51	51.9	9.27

NS: Non-significant.

Pearson's correlation coefficients (r) were also calculated to assess the degree of co-relationships among age and illness-related variables (i.e., length of symptoms, current symptom severity, overall symptom count, count of symptoms related to specific illness or condition) with variables of primary interest (emotional representations, perceived social support, and general

health). Significant correlations among remaining items (symptom-related items) are summarized in Table 6. Symptom length, specific symptom count, and symptom severity were used as covariates in the hierarchical linear regression analysis.

Table 6. Bivariate Correlations Among Illness-related Variables and Primary Measures.

<i>Variable</i>	<i>Emotional Representations</i>	<i>Social Support</i>	<i>General Health (SF-36)</i>
Age	-.071	-.078	.162*
Length of symptoms	.080	-.072	.184*
Current symptom severity	.163*	-.158	-.123
Overall symptom count	-.110	.106	.242**
Symptom relating to illness	.212**	-.128	-.147

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

Bivariate Relationships

Pearson's correlation coefficients (r) were calculated for variables of primary interest (i.e., emotional representations, perceived social support, and general health) in order to test the strength of the associations between the variables. Greater emotional representations were associated with lower reports of social support [$r(151) = -.26, p < .01$] and poorer general health [$r(151) = -.23, p < .01$]. Higher levels of social support was associated with better general health [$r(151) = .21, p < .01$].

Social Support and Emotional Representations

To examine whether perceived social support was associated with emotional representations, even after controlling for demographic and illness-related variables, a hierarchical linear regression analysis was performed (see Table 7). Emotional representations served as the criterion variable, with gender, age, and relationship status entered in Step 1; symptom length, specific symptom count, and symptom severity entered in Step 2; and social support entered as the primary predictor in Step 3. The overall model was significant [$F(7, 132)$]

= 4.03, $p = .001$] and accounted for 18.5% of the variance in emotional representations. Social support accounted for a significant proportion of the variance in emotional representations, (see Table 7; $\Delta R^2 = 5.8\%$, $p < .01$). After controlling for demographic and illness-related variables, social support was a significant predictor of emotional representations, with greater social support associated with diminished emotional representations.

Table 7. Summary of Hierarchical Regression Analyses for Variables Predicting Emotional Representations.

<i>Variable</i>	R^2	ΔR^2	β	t
<i>Step 1: Demographics</i>	.078*	--		
Gender			.217*	2.62
Age			-.124	-1.46
Relationship Status			.050	.580
<i>Step 2: Illness-related Variables</i>	.126**	.048		
Symptom Length			-.089	-1.04
Symptom Count			.144	1.71
Symptom Severity			.029	.351
<i>Step 3: Social Support</i>	.184**	.058**	-.254**	-2.99

Note: Standardized β coefficients reported; * $p < .05$, ** $p < .01$

Emotional Representations and Health Outcomes (Dimensions of the SF-36)

To examine the association between emotional representations and health outcomes, multiple hierarchical linear regression analyses were performed. Each of the eight subscales of the SF-36 (i.e., physical functioning, social functioning, role limitations due to physical problems and emotional problems, emotional well-being, vitality, pain, and general health perception) served as the criterion variables. For each analysis, gender, age, and relationship status were entered in Step 1; symptom length, specific symptom count, and symptom severity were entered in Step 2; and emotional representations were entered in Step 3. Pearson's correlation

coefficients (r) were calculated to assess multicollinearity among predictor variables included in the linear regression analyses. Correlations among symptom-related variables (i.e., symptom length, symptom count, and symptom severity), did not exceed .315; indicating minimal issues with multicollinearity in the analysis. Correlations among remaining predictor variables of health are summarized in Table 8.

Table 8. Correlations Among Predictor Variables of Dimensions of Health.

<i>Variable</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
1. Age							
2. Gender	-.080						
3. Relationship status	.025	-.105					
4. Symptom length	.407**	-.020	.162				
5. Symptom count	.014	.311**	.087	.111			
6. Symptom severity	.064	.224	-.145	.126	.315**		
7. Emotional representations	-.049	.323**	.047	.123	.329**	.043	

** $p < .05$

Functional status. The results of the linear regression analysis showed illness related variables explained 28% of the variance in reported physical functioning. Specifically, symptom count [$\beta = -.435$, $t(125) = -5.54$, $p < .001$], and symptom severity [$\beta = -.175$, $t(125) = -2.30$, $p < .05$], were associated with decreased physical functioning. The total model explained 31% of the variance in physical functioning and emotional representations added little to the predictive power of the model ($\Delta R^2 = .000$, $p > .10$).

Symptom count [$\beta = -.340$, $t(125) = -4.37$, $p < .001$], and symptom severity [$\beta = -.251$, $t(125) = -3.33$, $p < .01$], were also associated with decreased social functioning, and explained 28% of the variance in reported social functioning. Emotional representations contributed 2.5%

for a total model $R^2 = 32.3\%$ [$F(7, 125) = 8.51, p < .001$]. After controlling for demographic and illness-related variables, a higher degree of emotional representations was associated with decreased social functioning [$\beta = -.171, t(125) = -2.17, p < .05$].

Illness-related variables explained 17.6% of the variance in role limitations due to physical problems. Higher symptom count [$\beta = -.274, t(125) = -3.29, p < .001$], and greater symptom severity [$\beta = -.216, t(125) = -2.67, p < .01$] were associated with more limitations due to physical problems. Emotional representations contributed 2.6% for a total model $R^2 = 22.1\%$ [$F(7, 125) = 5.07, p < .001$]. Emotional representations were also a strong predictor of role limitations due to physical health, such that a greater degree of emotional representations were associated with more reported role limits [$\beta = -.173, t(125) = -2.05, p < .05$].

Emotional representations were a robust predictor of role limitations due to emotional problems, after controlling for demographic and illness-related variables [$\beta = -.372, t(125) = -4.34, p < .001$]. Demographic and illness-related variables accounted for 5.2% and 2.4% of the variance in role limitations due to emotional problems, respectively; whereas, emotional representations added 12.1%, for a total model $R^2 = 19.7\%$ [$F(7, 125) = 4.38, p < .001$]. Results of linear regression analyses for functional status are summarized in Table 9.

Well-being. Emotional representations were the strongest predictor of emotional well-being. Specifically, a lower degree of emotional representations were associated with better reported emotional well-being accounted for a significant proportion of the variance in emotional well-being [$\beta = -.210, t(125) = -2.31, p < .05$]. Though the total model explained only 19% of the variance in well-being, emotional representations did add to the predictive power of the model ($\Delta R^2 = 3.8\%, p < .05$). Emotional representations were the strongest predictor of vitality; specifically, a lower degree of emotional representations was associated with a higher reported

level of energy and lower level of reported fatigue [$\beta = -.214, t(125) = -2.41, p < .05$]. Older age was also associated with greater vitality [$\beta = .196, t(125) = 2.22, p < .05$]. Overall, demographic variables explained most of the variance in vitality (8.7% in Step 1), with illness-related variable contributing only 1.3% and emotional representations contributing 4.0% for a total $R^2 = 13.9%$ [$F(7, 125) = 2.89, p < .01$]. Symptom count and symptom severity were the strongest predictors of reported pain, such that a greater amount of symptoms [$\beta = -.360, t(125) = -4.72, p < .001$], and more severe symptoms [$\beta = -.337, t(125) = -4.55, p < .001$] were associated with more pain. The total model explained 35% of the variance in reported pain and emotional representations contributed little to the predictive power of the model ($\Delta R^2 = .005, p > .10$). Results of linear regression analyses for well-being are summarized in Table 9.

Overall evaluation of health. Emotional representations were the strongest predictor of perceived general health, with a lower degree of emotional representations associated with better general health [$\beta = -.214, t(125) = -2.34, p < .05$]. Overall, emotional representations explained most of the variance in general health in the models, contributing 4% for a total model $R^2 = 9%$ [$F(7, 125) = 1.77, p > .05$]. Refer to Table 9 for details of linear regression analyses for perceived general health.

Table 9. Summary of Hierarchical Linear Regression for Variables Predicting Health Outcomes.

	<i>Step 1 — Demographics</i>		<i>Step 2 — Illness-related variables</i>		<i>Step 3 — Emotional representations</i>			
	<i>R</i> ²	<i>F</i> <i>df</i> (3, 129)	ΔR^2	<i>F</i> <i>df</i> (6, 126)	ΔR^2	<i>F</i> <i>df</i> (7, 125)	β	<i>t</i>
<i>Functional status</i>								
Physical functioning	.028	1.23	.281***	9.39***	.000	7.99***	-.014	-.176
Social functioning	.022	.990	.275***	8.89***	.025*	8.51***	-.171*	-2.17
Role limitations ^a	.019	.834	.176***	5.08***	.026*	5.07***	-.173*	-2.05
Role limitations ^b	.052	2.36	.024	1.72	.121***	4.38***	-.372***	-4.34
<i>Well-being</i>								
Emotional well-being	.040	1.81	.021	1.38	.039*	1.99	-.210*	-2.32
Vitality	.087	4.07**	.013	2.32*	.040*	2.89**	-.214*	-2.41
Pain	.026	1.17	.315***	10.8***	.005	9.47***	-.075	-.972
<i>Overall evaluation of health</i>								
General health perception	.024	1.06	.026	1.12	.040*	1.77	-.214*	-2.34

In Step 1 (demographics), gender and age were entered. In Step 2 (illness related variables), symptom length, specific symptom count, and symptom severity were entered. In Step 3, each of the 8 dimensions of health was entered in a separate analysis.

Role limitations^a: due to physical problems, Role limitations^b: due to emotional problems

Note: *F* statistic reported for overall model for each Step; Standardized β coefficients reported;

df: Degrees of freedom.

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

Discussion

Hypotheses. The results of this study revealed perceived social support to be a significant predictor of emotional appraisals of illness. The relationship between perceived social support and emotional appraisals indicated that emotional appraisal may be a mechanism through which social support may buffer the emotional impact of chronic illness, such that those who reported higher levels of perceived social support also reported lower degrees of emotional appraisals than those who reported lower levels of support. While illness-related variables (i.e., symptom length, symptom count, and symptom severity) explained a portion of the variance in health outcomes, emotional representations were a significant predictor of social functioning,

role limitations due to physical and emotional problems, emotional well-being, vitality, and were notably the strongest predictor of general health perception. However, emotional representations were not a significant predictor of physical functioning or pain. Though the results of this study elucidate significant relationships among social support, emotional representations of illness, and specific health outcomes, it is important to clarify that neither causation nor direction of relationships can be determined; as this study was cross-sectional and correlational.

Social Support and Emotional Representations.

The findings on the relationship of perceived social support and emotional representations reflect the tenets of a stress-buffering model, in that support is related to well-being primarily for individuals under stress. In this case, perceived social support seemed to attenuate emotional appraisals of physical illness threats. Support protects (or “buffers”) individuals from the potentially harmful impacts of stressful events, and the buffering effect has been found to be especially true when there is perceived availability of social support (Cohen & Hoberman, 1983). Though there is less known of the influence of social support on emotional appraisals of illness, the results of this study are consistent with previous research in which Cohen and Hoberman (1983), found perceived availability of support protected individuals from the psychological distress associated with high levels of stress. Also, higher levels of social support have been linked to less negative affect, enhanced ability to cope, and increased feelings of personal control and self-esteem (Cohen & Wills, 1985). For the individuals with chronic illness in the current study, social support was beneficial in that it was associated with less anxious and fear-laden interpretations of illness experience. Social support may be one of the major pathways in which emotional states influence health perceptions, beliefs, and physical well-being (Salovey, Rothman, Detweiler, & Steward, 2000).

Unfortunately, in the experience of certain chronic illnesses, the impact of symptoms on physical functioning can lead to a reduction in social activities and interactions. Some individuals may find the act of limiting their social activity is effective in controlling the severity of their somatic symptoms. Garro and colleagues (1994), found that patients with temporomandibular disorders avoided social activities to limit the consequences of doing too much and because of the unpredictability of their symptoms. The results of this study reveal the important benefit of social support in reducing negative emotional appraisals of illness. Furthermore, the results also suggest the importance of maintaining a strong social support network in order to promote effective adjustment, coping, and positive health outcomes.

A basic assumption of the self-regulatory model is that individuals are problem solvers, actively involved in interpreting the meaning of somatic experiences and in determining how best to respond to these experiences of illness. Bauman (2003) suggests that, because individuals are involved in interpreting the meaning of somatic experiences and the impact these experiences have on their daily lives, the process of self-regulation and culture (or how people see themselves in the relation to surrounding world) are closely related. Interpretation of the experience somatic symptoms can be based on prior experience, beliefs and values, and social relationships. In certain contexts, where social relationships serve as an important buffer for coping with life stressors, support can be particularly influential in the development of both cognitive and emotional appraisals of illness. In fact, Luyas (1991) found that Latino patients attributed economic and family problems as factors associated with the cause and duration of illness. The results of this study, as well as previous research findings, reveal the importance of examining social support in order to capture a complete understanding of factors that shape of person's experience with chronic illness.

Emotional Representations and Health Outcomes.

In regards to the relationship of emotional representations and health outcomes, emotional representations predicted and explained a significant proportion of the variance of a majority of the health dimensions of the SF-36, including social functioning, role limitations due to physical and emotional problems, emotional well-being, and general health perception. This confirmed the expectation that emotional representations would predict health outcomes linked with emotional well-being in previous research. Certain emotion regulation strategies, such as cognitive change and the altering of the expression of moods, tend to be elicited by distress. Cognitive changes are often employed during illness experiences and significantly alter psychological and physical outcomes (Cameron, 2003). This trend may occur because, according to the self-regulatory model, cognitive and emotional appraisals of illness develop in a parallel fashion. As Goldman and colleagues (1996) pointed out, emotion regulation abilities may influence other illness representations as well as the appraisal of coping strategies. These emotion regulation capabilities may lead to better adaptation and outcomes. Within the context of chronic illness, an individual who is capable of repairing their mood state or emotional appraisal of symptoms may further develop illness representations with beliefs of high control and less severe consequences, which may foster adaptive behaviors and outcomes (Cameron, 2003). Although, other illness representations and coping strategies were not examined in the analysis in this study, these variables may explain why emotional representations predicted certain health outcomes for the population of interest.

Conventional diagnoses and functional somatic syndromes. The results of the study revealed no significant differences in reported perceived social support, emotional representations, or health outcomes, in the CD and FSS groups. The similarities in emotional

representations of illness and health outcomes in the CD and FSS groups may be due to the fact that the study included only individuals with ongoing physical symptoms. Though there may be differences among the CD and FSS groups in other aspects of illness experience that were not examined for the purposes of this study, the results indicated the emotional interpretations of symptom experience were similar for both illness groups. Previous research suggests illness representations to play an important role in guiding the ways FSS patients cope and adapt to their illness (Moss-Morris, Petrie, & Weinman, 1996). Anxiety and fear may arise from the uncertainty that accompanies the unknown etiology of FSS as well as the unpredictability of sustained somatic symptoms in general. The nature of the emotional responses (e.g. anxiety and fear) may be specific to the type of chronic illness. For example, for those with chronic pain, the fear of activity may lead individuals to avoid certain activities and guard and brace certain parts of their body. Sharp (2001), showed that the avoidance of certain activities lead to feelings of disability and guarding and bracing had direct effects on musculature that may itself aggravate pain.

In the current study, emotional representations did not predict or explain a significant proportion of the outcomes related to physical functioning or pain. Rather, symptom count and symptom severity predicted and explained a significant proportion of the variance in physical functioning and pain. The amount of symptoms and symptom severity may indeed be significant indicators of physical functioning and pain. However, there are other possible mechanisms involved in the effects of illness experience on pain and physical functioning. Other illness representations (e.g. identity, cause, duration, consequences, or controllability), that may have predicted and explained the variance in pain and physical functioning, were not examined in the current study. Perhaps, those with a negative appraisal of the consequences, duration, and

controllability reported a greater number of symptoms as well as more severe symptoms. This would be consistent with research suggesting that intensely negative appraisal of illness consequences is associated with pain intensity, pain-related disability, and psychological distress, independent of the level of physical impairment (Severeijns, Vlaeyen, van den Hout, & Weber, 2001). However, a more in-depth analysis would need to be conducted to determine if negative appraisals are related to physical functioning and pain in this specific population of interest.

The sample. The characteristics of the sample in the current study must be considered in order to delineate any influence these characteristics may have had on the results. The sample population was 85% female, which might have made it difficult to find gender differences in social support, emotional representations and health outcomes. The results did not reveal any gender differences in perceived social support or health outcomes. However, there were significant differences in emotional representations for males and females, with males reporting a higher degree of emotional representations. Previous research, specifically focusing on gender effects on appraisal and coping of pain, showed no gender differences in threat appraisal or emotional upset due to pain (Unruh et al., 1999). Gender was included in the regression analyses as a covariate, and did not significantly predict emotional representations or any of the domains of health outcomes.

The participants in the sample may be unique, relative to the larger population of those with chronic illness, in that they may have had a desire to reach out and communicate their experience. As the participants were recruited from online support forums, they may have had a deficit in social support or had a more negative experience of somatic symptoms than the typical individual with chronic symptoms of illness.

Limitations. The data for this study was gathered from online surveys, so internet access was necessary for participation. The collective of surveys included four surveys which were each quite long in content and each took about 10-15 minutes to complete. Therefore, attrition was a major challenge in the collection of reliable participant responses. Though, the assigning of participants to either the CD group or FSS group was done through careful consideration of current, available diagnostic information; many illnesses have emerging or conflicting diagnostic criteria. The existence of well-defined and popular research diagnostic criteria may lead to individuals being diagnosed with irritable bowel syndrome, chronic fatigue syndrome, and fibromyalgia more regularly than other FSS (Henningsen et al., 2007).

Importantly, these limitations do not undermine the study's strengths. As mentioned previously, the study included four comprehensive surveys which included multiple measures not included in this study (e.g. other illness representations, coping strategies, and the use alternative health treatments). Participants were recruited through several online support forums for various chronic conditions which provided the diversity of illnesses and chronic symptom experiences. The online aspect of the surveys allows the completion of the surveys to be convenient for participants and also allows access to a demographic which would otherwise be challenging to contact in a health setting. Since the participants were experiencing chronic symptoms of illness and possibly physical discomfort, the collective of surveys was divided into four surveys, to promote an ease of completion, that may have otherwise felt daunting if the study included one, lengthy survey. To ensure validity of the survey and to capture a full understanding of illness experience, data was gathered from participant responses which were completed across all four surveys. In the future, it may be beneficial to include additional measures and include incentives for participants in order to reduce the high rates of attrition.

Future directions. With the increasing prevalence of chronic illness, the findings from further research on social support have implications for clinical interventions to promote effective coping and adaptive outcomes for those with chronic illness. It would be interesting to explore the relationship between social support and other cognitive illness representations; and perhaps include a healthy control group to determine if the buffering effect of social support exists with other cognitive appraisals. Also, further investigation into the nuances of specific types of social support would be important for the development of effective social support interventions. For example, a future study could examine if perceived or received social support elicits more benefits for certain individuals with chronic symptoms of illness. The pattern of findings of this study suggests psychological factors play a significant role in both physical and emotional well-being. When recovery or cure may not be an immediate option for an individual with chronic illness, the strengthening of social support and effective emotion regulation may be important factors in improving health and well-being.

References

Botha-Scheepers, S., Riyazi, N., Kroon, H.M., Scharloo, M., Houwing-Duistermaat, J.J.,

- Slagboom, E. Rosendaal, F.R., Breedveld, F.C., Kloppenburg, M. (2006). Activity limitations in the lower extremities in patients with osteoarthritis: The modifying effects of illness perceptions and mental health. *Osteoarthritis and Cartilage*, *14*(11), 1104-1110.
- Baumann, L.C. (2003). Culture and illness representation. In Cameron, L.D. & Leventhal, H. (Eds.), *The self-regulation of health and illness behavior* (97-118). New York, NY: Routledge.
- Broadbent, E., Petrie, K., Main, J., & Weinman, J. (2006). The brief illness perception questionnaire. *Journal of Psychosomatic Research*, *60*, 631-637.
- Brummett, B. H., Barefoot, J. C., Siegler, I. C., Clapp-Channing, N. E., Lytle, B. L., Bosworth, H. B., Williams, R. B. Jr., & Mark, D. B. (2001). Characteristics of socially isolated patients with coronary artery disease who are at elevated risk for mortality. *Psychosomatic Medicine*, *63*, 267-272.
- Bury, M. (1991). The sociology of chronic illness: A review of research and prospects. *Sociology of Health & Wellness*, *13*(4), 451-468.
- Cameron, L.D. (2003). Anxiety, cognition, and responses to health threats. In Cameron, L.D. & Leventhal, H. (Eds.), *The self-regulation of health and illness behavior* (97-118). New York, NY: Routledge.
- Cohen, S. (1988). Psychosocial models of the role of social support in the etiology of physical disease. *Health Psychology*, *7*, 269-297.
- Cohen, S., & Hoberman, H. (1983). Positive events and social support as buffers of life change stress. *Journal of Applied Social Psychology*, *13*, 99-125.
- Cohen, S., & Wills, T.A. (1985). Stress, social support, and the buffering hypothesis.

- Psychological Bulletin*, 98, 310-357.
- Cooper, A., Lloyd, G., Weinman, J., & Jackson, G. (1999). Why patients do not attend cardiac rehabilitation: Role of intentions and illness beliefs, *Heart*, 82, 234-236.
- Decker, S.L., Schappert, S.M., & Sisk, J.E. (2009). Use of medical care for chronic conditions. *Health Affairs*, 28(1), 26-35.
- Derogatis, L. R., Lipman, R. S., Rickels, K., Uhlenhuth, E. H., & Covi, L. (1974). The Hopkins Symptom Checklist (HSCL). A self-report symptom inventory. *Behavioral Science*, 19, 1-15.
- Diamond, L.M., & Hicks, A.M. (2005). Attachment style, current relationship security, and negative emotions: The mediating role of physiological regulation. *Journal of Social and Personal Relationships*, 22, 499-518.
- Dimatteo, M.R. (2004). Social support and patient adherence to medical treatment: A meta-analysis. *Health Psychology*, 23, 207-218.
- Figueiras, M.J., & Alves, N. (2006). Lay perceptions of serious illnesses: An adapted version of the Revised Illness Perception Questionnaire (IPQ-R) for healthy people. *Psychology and Health*, 22(2), 143-158.
- Gallant, M. P. (2003). The influence of social support on chronic illness self-management: A review and directions for research. *Health Education & Behavior*, 30(2) 170-195.
- Gallo, L.C., & Matthews, K.A. (2003). Understanding the association between socioeconomic status and physical health: Do negative emotions play a role? *Psychological Bulletin*, 129(1), 10-51.
- Gandek, B., Sinclair, M., Kosinski, M., & Ware, J. (2004). Psychometric evaluation of the SF-36 Health Survey in Medicare managed care. *Health Care Financing Review*, 25(4), 5-25.

- Hagger, M.S., & Orbell, S. (2003). A meta-analytic review of the common-sense model of illness representations. *Psychology & Health, 18*(2), 141-184.
- Heijmans, M., de Ridder, D., Bensing, J. (1999). Dissimilarity in patients' and spouses' representations of chronic illness: Exploration of relations to patient adaptation. *Psychological Health, 14*, 451-466.
- Henningsen, P., Zipfel, S., & Herzog, W. (2007). Management of functional somatic syndromes. *The Lancet, 369*, 946-955.
- Hoffman, C., Rice, D.P., & Sung, H.Y. (1996). Persons with chronic conditions: their prevalence and costs. *Journal of the American Medical Association, 276*(18), 1473-1479.
- Holtzman, S., Newth, S., & DeLongis, A. (2004). The role of social support in coping with daily pain among patients with rheumatoid arthritis. *Journal of Health Psychology, 9*(5), 677-695.
- Horne, R. & Weinman, J. (2002). Self-regulation and self-management in asthma: Exploring the role of illness perceptions and treatment beliefs in explaining non-adherence to prevent medication. *Psychology and Health, 17*, 17-32.
- House, J.S. (2001). Social isolation kills, but how and why? *Psychosomatic Medicine, 63*, 273-274.
- House, J.S., Landis, K.R., & Umberson, D. (1988). Social relationships and health. *Science, 241*(4865), 540-545.
- Huxhold, O., Fiori, K.L., Windsor, T.D. (2012). Interplay of social network characteristics, subject well-being, and health: The costs and benefits of socio-emotional selectivity. *Psychology and Aging, 28*(1), 3-16.
- Hwu, Y. (1995). The impact of chronic illness on patients. *Rehabilitation Nursing, 20*, 221-225.

- Jopson, N.M., & Moss-Morris, R. (2003). The role of illness severity and illness representations in adjusting to multiple sclerosis. *Journal of Psychosomatic Research, 54*(6), 503-511.
- Kaptein, A.A., Scharloo, M., Helder, D.I., Kleijn, W.C., van Korlaar, I.M., Woertman, M. (2003). Representations of chronic illness. In Cameron, L.D. & Leventhal, H. (Eds.), *The self-regulation of health and illness behavior* (97-118). New York, NY: Routledge.
- Kiecolt-Glaser, J.K., Garner, W., Speicher, C., Penn, G.M., Holliday, J., Glaser, R. (1984). Psychosocial modifiers of immunocompetence in medical students. *Psychosomatic Medicine, 46*, 7-14.
- Kok, B.E., & Fredrickson, B.L. (2010). Upward spirals of the heart. Autonomic flexibility, as indexed by vagal tone, reciprocally and prospectively predicts positive emotions and social connectedness. *Biological Psychology, 85*, 432-436.
- Kroenke, K., Strine, T. W., Spitzer, R. L., Williams, J. B. W., Berry, J. T., & Mokdad, A. H. (2009). The PHQ-8 as a measure of current depression in the general population. *Journal of Affective Disorders, 114*(1-3), 163-173.
- Kung, H.C, Hoyert, D.L, Xu, J.Q., & Murphy, S.L. (2008). Deaths: Final data for 2005. *National Vital Statistics Reports, 56*(10), 1-120.
- Lee, M., and Rotheram-Borus, M. J. (2001). Challenges associated with increased survival among parents living with HIV. *American Journal of Public Health, 91*, 1303–1309.
- Lewis, M.A., & Rook, K.S. (1999). Social control in personal relationships: Impact on health behaviors and psychological distress. *Health Psychology, 18*, 63-71.
- Leventhal, H., Brissette, I., & Leventhal, E. (2003). The common-sense model. In Cameron, L.D. & Leventhal, H. (Eds.), *The self-regulation of health and illness behavior* (97-118). New York, NY: Routledge.

- Leventhal, H., Nerenz, D.R., & Steele, D.S. (1984). Illness representations and coping with health threats. In Baum, A., Taylor, S.E., & Singer, J.E. (Eds.), *Handbook of psychology and health*, 4, 219-252. Hillsdale, NJ: Erlbaum.
- Looper, K.J., & Kirmayer, L.J. (2004). Perceived stigma in functional somatic syndromes and comparable medical conditions. *Journal of Psychosomatic Research*, 57(4), 373-378.
- Lutgendorf, S.K., Antoni, M.H., Ironson, G., Fletcher, M.A., Penedo, F., Baum, A., Schneiderman, N., & Klimas, N. (1995). Physical symptoms of chronic fatigue syndrome are exacerbated by the stress of Hurricane Andrew. *Psychosomatic Medicine*, 57, 310-323.
- Montoya, P., Larbig, W., Braun, C., Preissl, H., & Birbaumer, N. (2004). Influence of social support and emotional context on pain processing and magnetic brain responses in fibromyalgia. *Arthritis & Rheumatism*, 50(12), 4035-4044.
- Moss-Morris, R., Petrie, K.J., & Weinman, J. (1996). Functioning in chronic fatigue syndromes: Do illness perceptions play a regulatory role? *British Journal of Health Psychology*, 1, 15-25.
- Moss-Morris, R., Weinman, J., Petrie, K.J., Horne, R., Cameron, L.D., & Buick, D. (2002). The Revised Illness Perception Questionnaire. *Psychology and Health*, 17, 1-16.
- Moss-Morris, R., & Wrapson, W. (2003). Functional somatic syndromes. In Cameron, L.D. & Leventhal, H. (Eds.), *The self-regulation of health and illness behavior* (97-118). New York, NY: Routledge.
- Primomo, J., Yates, B. C. and Woods, N. F. (1990), Social support for women during chronic illness: The relationship among sources and types to adjustment. *Research in Nursing & Health*, 13, 153-161.

- Salovey, P., Rothman, A., Detweiler, J.B., & Steward, W.T. (2000). Emotional states and physical health. *American Psychologist*, *55*(1), 110-121.
- Saltzein, B.J., Wyshak, G., Hubbuch, J.T., Perry, J.C. (1998). A naturalistic study of the chronic fatigue syndrome among women in primary care. *General Hospital Psychiatry*, *20*, 307-316.
- Schwarzer, R., & Leppin, A. (1991). Social support and health: A theoretical and empirical overview. *Journal of Social and Personal Relationships*, *8*(1), 99-127.
- Severeijns, R., Vlaeyen, J.W., van den Hout, M.A., & Weber, W.E. (2001). Pain catastrophizing predicts pain intensity, disability, and psychological distress independent of the level of physical impairment. *The Clinical Journal of Pain*, *17*, 165-172.
- Sharpe, T.J. (2001). The “safety seeking behaviors” construct and its application to chronic pain. *Behavioral and Cognitive Psychotherapy*, *29*, 241-244.
- Shaw, B.A., Krause, N., Chatters, L.M., Connell, C.M., & Ingersoll-Dayton, B. (2004). Emotional support from parents early in life, aging, and health. *Psychology and Aging*, *19*, 4-12.
- Smith, T.W., Cribbet, M.R., Nealey-Moore, J.B., Uchino, B.N., Williams, L.E., & Thayer, J.F. (2011). Matters of the heart: Respiratory sinus arrhythmia response to marital interaction and associations with marital quality. *Journal of Personality and Social Psychology*, *10*, 103-119.
- Taylor, S. E. (2007). Social support. In H. S. Friedman & R. C. Silver (Eds.), *Foundations of health psychology* (145–171). New York: Oxford University Press.
- Thoits, P.A. (1995). Stress, coping, and social support processes: Where are we? What next? *Journal of Health and Social Behavior*, *53*, 53-79.

- Thompson, E. R. (2007). Development and validation of an internationally reliable short-form of the positive and negative affect schedule (PANAS). *Journal of Cross-Cultural Psychology, 38*(2), 227-242.
- Uchino, B. N. (2006). Social support and health: A review of physiological processes potentially underlying links to disease outcomes. *Journal of Behavioral Medicine, 29*, 377-387.
- Unruh, A.M., Ritchie, J., & Merskey, H. (1999). Does gender affect appraisal of pain and pain coping strategies? *Clinical Journal of Pain, 15*, 31-40.
- Vogeli, C., Shields, A., Lee, T.A., Gibson, T.B., Marder, W.D., Weiss, K.B., Blumenthal, D. (2007). Multiple chronic conditions: Prevalence, health consequences, and implications for quality, care management, and costs. *Journal of General Internal Medicine, 22*(3), 391-395.
- Vormbrock, J.K. (1993). Attachment theory as applied to war-time and job-related marital separation. *Psychological Bulletin, 114*, 122-144.
- Ware, J.E., Kosinski, M., & Gandek, B. (2004). *SF-36 Health survey manual & interpretation guide*. Lincoln: QualityMetric Inc.
- Weinman, J., Petrie, K.J., Moss-Morris, R., & Horne, R. (1996). The illness perception questionnaire: A new method for assessing the cognitive representation of illness. *Psychology and Health, 11*, 431-445
- Wessley, S., Nimnuan, C., & Sharpe. (1999). Functional somatic syndromes: one or many? *The Lancet, 354*, 936-939.
- Wu, S.Y., & Green, A. (2000). *Projection of chronic illness prevalence and cost inflation*. Santa Monica, CA: RAND Health.
- Zimet, G.D., Dahlem, N.W., Zimet, S.G., & Farley, G.K. (1988). The multidimensional scale of

perceived social support. *Journal of Personality Assessment*, 52, 30-41.

Curriculum Vitae

Courtney Lemons

Education

Masters of Arts in General Psychology · University of North Florida 2013

Bachelors of Arts in Psychology · University of North Florida 2009

Concentration in Sociology · Magna cum Laude

Research Experience

Verification of Illness, Coping, and Experience “VOICE” Project · Jacksonville, Florida (2011-2013)

Graduate Research Assistant · Health Physiology Lab at the University of North Florida · Advisor: Dr. Lori Lange

The United Way of Northeast Florida · Life Act II Partnership Council · Jacksonville, Florida (2008)

Undergraduate Research Assistant · University of North Florida · Advisor: Dr. Adam Shapiro

Teaching Experience

Undergraduate Research Methods Lab · Guest Lecturer · Simple and Multiple Linear Regression

Conference Presentations

Lemons, C., Kleynshteyn, I., & Lange, L. (March 13th, 2013). Adjusting to chronic illness: The role of illness representations and coping strategies. Poster presented at the Southeastern Psychological Association Annual Convention, Atlanta, Georgia.

Kleynshteyn, I., Lange, L., & Lemons, C. (January 18th, 2013). Social connectedness and quality of life in chronically ill patients. Poster presented at Society for Personality and Social Psychology Annual Convention, New Orleans, Louisiana.

Lemons, C., Lange, L., Eldred, K., DeVore, H., & Kleynshteyn, I. (August 3rd, 2012). Limited social support and emotional representations for patients with chronic illness. Poster presented at the American Psychological Association Annual Convention, Orlando, Florida.

Kleynshteyn, I., Lange, L., Eldred, K., Lemons, C., & DeVore, H. (August 3rd, 2012). How do patients adjust to the impact of conventional and functional chronic illnesses? Poster presented at the American Psychological Association Annual Convention, Orlando, Florida.

Professional Experience

Family Case Coordinator (2011)

Mental Health Resource Center · Jacksonville, Florida

Ensure family services are provided in the most efficient manner to protect children who may have had allegations of abuse, neglect and/or abandonment. · Connect children and families with services by providing referrals to community agencies. · Collaborate with Family Service Counselors to remove barriers to obtaining services and supports. · Ability to conduct drug screenings; trained in crisis intervention, family advocacy, first aid and CPR.

Volunteerism and Community Outreach

DKMS · Bone marrow registry drive (2011/2013)

Lutheran Social Services (2011)

The Muscular Dystrophy Association (2011)

The United Way of Northeast Florida (2008)

Multiple Sclerosis Society of Jacksonville (2007)

Mission of Hope · Outreach Assistant · Honduras (2003-2005)

Miami Children’s Hospital · Activity Therapy (2005)

