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Association of Controllability, Depression, and Symptoms in Fibromyalgia Patients

Benjamin P. Rose

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Association of Controllability, Depression, and Symptoms in Fibromyalgia Patients

by

Benjamin P. Rose

A doctoral project submitted in partial satisfaction of the requirements for the degree of Doctor of Psychology

August, 2007
Each person whose signature appears below certifies that this doctoral project in his opinion is adequate, in scope and quality, as a doctoral project for the degree of Doctor of Psychology.

Kendal C. Boyd, Assistant Professor of Psychology

Louis E. Jenkins, Professor of Psychology

David A. Vermeersch, Associate Professor of Psychology
Acknowledgements

I would like to start by acknowledging the time, effort, and patience that Dr. Boyd had with me throughout this process. I learned a lot from him about the research process and this project would not have been completed without his dedication to me as a student. Second, I would like to acknowledge Dr. Vermeersch and Dr. Jenkins for their input and help making my project complete. Next, I would like to acknowledge my father, Duncan Rose, for helping me edit my project. Lastly, I would like to acknowledge Kimberley Brewer for answering my questions about statistics and helping me finalize my proposal and the defense of my proposal.
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Abstract of the Doctoral Project

Association of Controllability, Depression, and Symptoms in Fibromyalgia Patients

by

Benjamin Rose, M.A.

Doctor of Clinical Psychology
Loma Linda University, August 2007
Dr. Kendal Boyd, Chairperson

This study attempted to understand the role of controllability and learned helplessness in the experience of Fibromyalgia (FMS) patients. The study was cross-sectional and correlational and examined the relationships between controllability, learned helplessness, depression, and somatic/retarded activity. The study concluded controllability and learned helplessness were associated with depression and could also predict depression. In addition, the study showed that learned helplessness was associated and could predict somatic/retarded activity in FMS patients.
Literature Review

Fibromyalgia (FMS) has been defined by the American College of Rheumatology (ACR) as widespread muscle pain, called tenderpoints, in at least 11 of the 18 surveyed muscles (Wolfe et al., 1990). These muscles are in the neck, chest, back, forearms, gluteal muscles, and legs. The pain must last longer than 3 months and cannot be more adequately accounted for by the presence of another disease. This definition only contributes to the enigma of FMS. One problem is that there are over 600 muscles in the human body and the 18 test sites represent approximately 3% of all the muscles (Bennett, 2002). Another problem is that the definition is too broad. It seems that many people, not diagnosed with FMS, have feelings of "aching all over." Despite these problems, the ACR definition remains the standard for researchers and clinicians. With such a loose definition, however, it may be impossible to find a specific etiology to explain the diagnosis of everyone suffering with FMS.

FMS is very prevalent in the United States. In 1995 Wolfe, Ross, Anderson, Russell, and Herbert studied the characteristics and prevalence of FMS. They estimated the prevalence of FMS to be 2.0% (women had a prevalence of 3.4% and men 0.5%) of the general population. In America it is estimated that three to six million Americans have FMS and there is a good chance that the numbers have gone up since the last major study, eleven years ago. There is a typical profile associated with FMS. Wolfe's et al. study showed that 91.1% of the FMS patients were female and 89.4% were Caucasian. It is also interesting to note that there was an association between FMS and not finishing high school, having a reduced household income, having a divorced status, visits to
physicians, and applications for disability. In addition to muscle pain, FMS patients deal with a host of other peripheral problems that are not part of their official diagnosis. The common problems are sleeping difficulties, fatigue, depression, pain sensitization, dysautonomia (abnormal functioning of the autonomic nervous system), cognitive dysfunction, dizziness, cold intolerance, and multiple sensitivities (Clauw, 1995; Aaron, Bradley, Alarcon, Triana-Alexander, Alexander, Martin, et al., 1997; Littlejohn, 1995; Reiffenberger & Amundson, 1996). FMS is often comorbid with Irritable Bowel Syndrome, Irritable Bladder Syndrome, Chronic Fatigue Syndrome, and Restless Leg Syndrome (Bennett, 2002; Aaron et al., 2001).

FMS patients also face psychological problems, particularly depression. Depression has been noticed in FMS patients and extensive research has been undertaken on the relationship between FMS and depression. Hudson and Pope (1996) summarized the major research. First, people with FMS have high rates of major depressive disorder symptoms and people with a major depressive disorder have a lot of FMS symptoms (Croft, Rigby, & Boswell, 1993; Croft, Schollum, & Silman, 1994). Second, psychiatric symptoms are similar in FMS patients and patients with Major Depressive Disorder (Ercolani, Trombini, & Chattat, 1994). Next, those who have been diagnosed with FMS have high rates of depression throughout their lifetimes. Of the studies reviewed (Ahles, Khan, & Yunus, 1991; Burckhardt, Wiens, & O’Reilly, 1990; Goldenberg, 1986; Hudson et al., 1992; Hudson, Hudson et al., 1985; Kirmayer, Robbins, & Kapusta, 1988; Tariot, Yocum, & Kalin, 1986) lifetime rates of depression range from 20% to 86% and the mean was 58%. Overall it is clear that depression is a problem that FMS patients frequently face and a close examination is warranted.
FMS is Medically Unexplained

The etiology of FMS is still unclear after 30+ years of research. Bennett (2002) has researched FMS extensively and he concedes that there is still no generally accepted cause for FMS, but many different hypotheses have been proposed. He states that epidemiologists, rheumatologists, and pain scientists are doing the major research in the field of FMS. Epidemiologists have hypothesized that "American College of Rheumatology (ACR)-defined FMS is at one end of a continuous spectrum of chronic musculoskeletal pain." Rheumatologists have hypothesized that FMS patients have differences in processing sensory information as well as neuroendocrine dysfunction (Pillemer, Bradley, Crofford, Moldofsky, & Chrousos, 1997). Pain scientists have hypothesized that "nociceptive (pain causing) mechanisms in FMS have features that are similar to other chronic pain states." Bennett is very optimistic about finding a concrete cause for FMS in the future, but currently there is no agreed-upon etiology for FMS. While researchers search for the cause of FMS, patients are stuck with a syndrome without a known etiology or a known cure. There have been a lot of proposed interventions for FMS, such as cognitive-behavioral therapy, anti-depressant medication, sleeping pills, education about the syndrome, exercise, pain medication, and stress-management programs (Gowans, de Hueck, Voss, & Richardson, 1999). All of these interventions have been shown to be moderately effective for some FMS patients, but none of them "cure" FMS. The treatments are designed to treat the symptoms of FMS and not to cure a root cause. This leaves FMS patients frustrated and having to endure many painful phenomena in body and in mind.
Learned Helplessness, Internality, and Controllability

One notable phenomenon observed in FMS patients' mental health is helplessness. According to Peterson (1982) helplessness is described as "defenselessness, powerlessness, or impotence." Not every FMS patient feels helpless, but conditions appear to be right for the development of helplessness and possibly depression. FMS patients often feel that they have no control over their physical environment because of their experiences with uncontrollable events.

This feeling of uncontrollability can occur either before or after the occurrence of FMS. Possible uncontrollable events before the diagnosis of FMS could be traumatic events, such as physical abuse, sexual abuse, illnesses, loss of a loved one, or a major accident. Patients experience uncontrollable events subsequent to FMS in several ways. They may experience little control over the painful chronic situation they find themselves in. They may feel out of control when they go to the doctor and the doctor says that there is nothing wrong with them. They can feel out of control when pain occurs at random times. FMS patients often find themselves in uncontrollable situations whether before or after the diagnosis of FMS. There are many ways to respond to uncontrollable events and helplessness is one of those ways.

Helplessness is often understandable but it can become debilitating and maybe even turn into a condition termed learned helplessness. Maier and Seligman (1976) postulated a model of learned helplessness based on an experiment they did with dogs. They found that when dogs had no control over being electrically shocked, they eventually would make no effort to avoid the shock. They would just lie in the corner, passively succumbing to the shocks. Seligman then hypothesized that when humans
experience situations similar to this, they would react in a similar way. He stated that when humans are faced with repeated uncontrollable situations, they have expectations of uncontrollability and then react with “learned” helplessness. The theory was not without its critics.

Fosterling (2001) recounted the history of criticisms that the learned helplessness model received. The model does not allow for differentiation between an uncontrollable situation that will affect a specific area of life and one that will affect many areas. Second, Seligman’s model does not allow for the prediction of when the symptoms will be long-term or short-term. Third, the model of learned helplessness does not address when the helplessness symptoms affect self-esteem.

These previous criticisms were addressed in 1978 by Abramson, Seligman, and Teasdale when they improved upon their first model and postulated a reformulation of the learned helplessness theory. In this model, the dimensions of globality, locus of control, and stability determine the expectation of controllability. First of all, they introduced the dimension of globality (referenced above), which is made by determining if the attribution is generalized to all areas of life or specific to a particular area of life. For example, if a person believes they failed a math test because they are incompetent in math, the resulting helplessness will not affect as many areas as if the person believed that they were totally incompetent. The next shift in theory was examining the original attributional dimensions (locus of control and stability). When people attribute a negative event to an internal cause, self-esteem is affected, and a “personal helplessness” arises. On the other hand, if one attributes a negative event to an external cause, people’s self-esteem is not affected, but a universal helplessness is seen. Stability was also reexamined
in order to be able to predict when situations were temporary or chronic. Temporary helplessness was suggested to be seen in situations where the situation was not permanent. For example, failure of a test because of poor lighting is not as stable as failure because of the belief of incompetence. The revised learned helplessness theory has been influential in the understanding of perceptual processes and the experience of depression.

Abramson et al. (1978) suggest that people develop styles in how they typically respond to events. These styles influence if a person develops learned helplessness. These styles are made of patterns of cognitive interpretations, or attributions, about what they experience in life. These styles interact with learned helplessness when people are unclear about the amount of controllability in a situation. Abramson et al. labeled these styles pessimistic and optimistic based on attributions of globality, stability, and locus of control. A person who does not see experiences as controllable are likely to develop a pessimistic attributional style, and then consequently react with learned helplessness.

There are many different variables that determine whether or not a person develops an expectation of uncontrollability and a pessimistic attributional style, but theoretically an important variable is the amount and severity of uncontrollable events in their past. Once a person experiences repeated uncontrollable situations, they begin to expect the environment to be uncontrollable (Peterson, 2000). In addition, if a person experiences uncontrollability in an emotionally charged event, this has the potential of greatly affecting their future perceptions. The expectation of uncontrollability has more consequences than the immediate event because it can reach across genres and time to affect the individual. For example, when pessimistic students fail a test and attribute the
failure to internal, stable, and global causes, they are likely to believe that they will fail many more tests in the future. The learned helplessness comes through in their expectation that they will fail future tests. The attributional styles that people develop, optimistic or pessimistic, have the potential for profound psychological and even physiological consequences (Anderson & Arnoult, 1985; Dykema, Bergbower, & Peterson, 1995; Kamen-Siegel, Rodin, Seligman, & Dwyer, 1991). Central to this discussion is the understanding of attribution theory, which will be discussed in the following section.

*Attribution Theory*

Human history is filled with a search for meaning. Our early ancestors searched for meaning about wind, fire and rain. They developed beliefs about what caused them whether it be a “god” or just a product of the earth. Early philosophers noticed people searching for meaning and endeavored to understand when and why it occurred. Friedrich Fosterling (2001) recounted the history of the philosopher Hume. Hume studied the issue of people’s search for meaning, or a search for a cause, and came up with three conclusions. First, there must a temporal component to it. One event directly preceded the following effect. Second, there was the spatial aspect. A cause had to be close in proximity to the effect. Finally, there had to be many repeated instances of the same cause having the same effect. Since Hume there have been many studies into the mechanisms whereby people assign causality and consequences. Fritz Heider is one of the premier researchers in this area and his work forms the basis for most researchers interested in assigning causality.
Fritz Heider, the founder of Attribution Theory, was interested in how people understand behavior and developed Attribution Theory to explain this concept. Attribution Theory is a social psychological theory that examines how people explain events that have occurred in their lives. People form attributions, or cognitive responses, in order to understand, predict, and control their environment. Heider (1958) stated that causal attributions can be divided into different dimensions: internality (residing within the person) and externality (residing within the environment). For example, there would be an internal causal attribution when a person attributed failure on a test to his ignorance. Ignorance is something that resides within people and therefore it would be an internal attribution. An external attribution would exist when someone believed his or her failure was due to poor instruction. In more recent research these dimensions have been called loci of control. Researchers later labeled the dimensions stability and globality to describe the qualities of causal attributions. Stability refers to how stable a person views the cause. Globality refers to how pervasive in his or her life the person believes the cause is. So a person may attribute his test failure to his own ignorance, subsequently he could then believe that he was ignorant in many different areas of life and that this ignorance could last for some time.

Like every theory, Attribution theory has a basic set of assumptions as described by Fosterling (2001). The first assumption is that when people are faced with stimuli they have a cognitive response to them and then they have a reaction. Second, people try to develop realistic explanations to what happens in their lives. Third, making attributions is a functional thing to do. Bernard Weiner (1995) has also studied attribution theory quite extensively and he states that forming attributions is a normal and adaptive thing for
humans to do. If no one searched for the causes of events, learning would be very difficult, if not impossible.

How do people make attributions? Heider suggests that people form attributions very quickly and often unconsciously. As previously stated, one of the basic assumptions of attribution theory is that people search for meaning. People ask themselves “Why?” to the situations they face each day. They come up with causal attributions to why things happen. People don’t search for meaning in every situation. For instance, most people, when eating an orange, expect to taste an orange and don’t search for meaning. However, if a person bit into an orange and it tasted like an apple, a search for meaning would begin. Fosterling (2001) stated that people search for meaning when “schema-inconsistent” events happen or a negative outcome happens. People who are not satisfied with a specific outcome, often search for the problem to improve further outcomes. Once a person has searched for meaning and assigned causality, we enter into what Kelly and Michela (1980) delineate as attributional theory.

Attribution theory and attributional theory can be differentiated in that attributions relate to the conditions present when people assign causality and attributional theory relates to the psychological consequences that come from making attributions. Humans can either be correct in their causal attributions or they can be incorrect in their causal attributions. Humans tend to show patterns in their causal attributions, like personality traits, and psychological consequences occur.

FMS patients make attributions about the pain they are experiencing. They make a decision if they caused it (locus of control) and then make an attributional formulation on what can be done. A pessimistic attributional style would state that the pain will affect
many areas of life (globality) and the pain will last for a long period of time (stability). It is important for FMS patients to develop an attributional style that is hopeful and not slip into learned helplessness. This study attempted to understand the experience of depression, learned helplessness, controllability, and somatic/retarded activity. Specifically, it was hypothesized that there would be correlations between controllability and depression, between learned helplessness and depression, and between learned helplessness and somatic/retarded activity.
Method

The research design for this study was cross-sectional and correlational.

Participants

The population that this study worked with was patients who have been diagnosed with FMS, by a physician, in the Rheumatology Department of the Loma Linda University Medical Center. A previous study (Wolfe, Ross, Anderson, Russell, Hebert, 1995) suggested that population is comprised mostly of Caucasian women, but participants from other demographics were not ruled out.

Instruments

*Rheumatology Attitudes Index (RAI)*. This study used three instruments in this investigation. The first is the Rheumatology Attitudes Index (RAI). This measure is an adaptation from the Arthritis Helplessness Index (AHI). The AHI was developed to understand the perceptions of people who had arthritis (Nicassio, Wallston, Callahan, Herbert, & Pincus, 1984). The RAI evolved from the AHI to take a more general approach to rheumatology problems. The RAI is a 15 item questionnaire designed to understand the perceptions of helplessness and controllability in people with rheumatology problems. The patient answers the questions on a five-point likert scale ranging from strongly disagree to strongly agree. Callahan, Brooks, and Pincus (1988) report the Cronbach’s Alpha for the one factor RAI measure as .68. They also analyzed external criterion validity by calculating “correlation coefficients between the RAI and 12 disease status measures,” for Rheumatoid Arthritis. Nine of these measures had
statistically significant correlations with the RAI: ADL (activities of daily living) difficulty (.53), ADL dissatisfaction (.54), and ADL pain (.67), grip strength (-.29), button test (.22), joint count (.36), formal educational level (-.28), morning stiffness (.22) and walking time (.20). The RAI can be broken down into either one or two factors. The two factor model breaks the RAI down into the factors of Learned Helplessness and Internality. Cronbach’s Alpha was found to be .75 for the Internality scale and .63 for the Learned Helplessness scale (Stein, Wallston, & Nicassio, 1988). Stein, Wallston, and Nicassio (1988) found a statistically significant correlation between the Learned Helplessness and Internality factors and thus using one factor may also be used.

Center for Epidemiological Studies – Depression (CES-D). The CES-D is an instrument that was designed to measure depressive symptoms. The measure is 20 items long and asks people how often their depressive symptoms have occurred. Participants can choose “Rarely or none of the time (less than 1 day), Some or a little of the time (1-2 days), Occasionally or a moderate amount of time (3-4 days), or Most or all of the time (5-7 days). Factor analyses of the CES-D items typically find a one factor solution or a four factor solution (Knight, Williams, McGee, Olaman, 1997). The four factors are depressed affect, positive affect, somatic and retarded activity, and interpersonal difficulties (Radloff, 1977). These results were replicated in a study that looked at the CES-D in a population of women in “middle-life” in addition a one factor solution was found, the depression factor (Knight, Williams, McGee, & Olman, 1997). The Knight et al. study reported Cronbach’s Alpha was .88 for the one factor solution. In measuring validity Radloff (1977) found the that the CES-D correlated with the Hamilton Clinician’s Rating scale and the Raskin Rating scale. The correlations were moderate.
with a range of .44 to .54. The CES-D has been used in many different settings, including health care settings (Caracciolo & Giaquinto, 2002; Schein & Koenig, 1997).

*McGill Pain Questionnaire-Short Form (SF-MPQ).* The SF-MPQ comes from the original McGill Pain Questionnaire. The full version of the MPQ asks patients to rate their pain experience and classifies their responses into the groups of Sensory, Affective, Evaluative, and Miscellaneous. The SF-MPQ gives patients a list of 15 words that describe pain (i.e. throbbing, shooting, stabbing, etc.) and then ask the patients to relate the words to their experience. Patients choose either severe, moderate, mild or none for each word given. A concurrent validity study with between the SF-MPQ and the original MPQ found correlations between .67 and .87 and specifically a correlation of .70 for musculoskeletal pain (Melzack, 1987). Studies of reliability have found the full scale’s Cronbach’s Alpha range for the SF-MPQ from .73 to .89 (Burckhardt and Bjelle, 1994). The scale has shown to have one or two factors (Wright, Amundson, & McCrery, 2001; Holroyd et al., 1992).

*Procedure*

The participants were recruited in the Rheumatology department of the Loma Linda University Medical Center. A handout was given to FMS patients when they checked in with the office receptionist, and a study announcement was posted in the waiting room. Interested participants were then given the informed consent documents and were given an opportunity to ask questions regarding the study. Those who chose to continue in the study were then given a paper and pencil questionnaire to fill out the measures as they waited to see their doctor in the Rheumatology Department. Once
completed, they returned the questionnaire to the nurse who put their questionnaire into an envelope marked “confidential”, and then they received a $20 gift certificate for a local department or grocery store. A research assistant picked up the completed questionnaires several times a week and stored them in a locked office in the Loma Linda University Psychology Department. The participants filled out the questionnaires anonymously.

**Statistical Analysis**

This study used correlation, partial correlation, and hierarchical multiple regression to analyze the data.

The researchers initially checked for correlations between the dependant variables and several demographic categories: age, gender, education, race/ethnicity, and socio-economic status as measured by a combination of education and occupation. After this, the researchers investigated the correlation between pain severity (SF-MPQ) and the dependant variables. If pain severity or demographic variables were significantly related to the dependant variables, they were covaried for in the statistical analysis.

The researchers used hierarchical multiple correlation/regression analyses to test the study’s hypotheses. The study hypothesized that there would be an association between Controllability and Depression, an association between Learned Helplessness and Depression, and an association between Learned Helplessness and Somatic/Retarded Activity.
All statistical analyses were performed using SPSS version 12. Missing data was replaced using the expectation maximization (EM) method described and generally recommended by Tabachnick and Fidell (2001).
Results

There were a total of 52 questionnaires returned that reported a diagnosis of Fibromyalgia. The average age of the participants was 50. The majority of the respondents were Caucasian (65%), female (98%), and married (56%). Complete demographics can be seen on Table 1.

This study's analysis found a significant correlation between the two subscales of Internality and Learned Helplessness ($r = .49, p < .01$), which strongly supported the use of a one-factor RAI scale. The RAI one-factor solution has never been given a name. The name of Controllability was formulated after examining the correlation between each item on the RAI with the overall RAI scale. The items with the highest correlations were numbers 5, 6, 8, 9, and 13; these can be seen in Table 2. All of these questions had a theme of control or the perception of control, so the name Controllability was given to this overall scale. Cronbach's Alpha was .76 for the Internality scale, .65 for the Learned Helplessness scale, and .80 for the overall RAI scale, Controllability.

As can be seen on Table 3, socio-economic status, age, and ethnicity were not significantly correlated with any variables used in data analysis and therefore did not need to be controlled for. The McGill Pain Questionnaire-Short Form (SF-MPQ), which measures pain severity, was significantly correlated with Depression, Learned Helplessness, Depressive Affect, and Somatic/Retarded Activity. Since the SF-MPQ was correlated with many of the variables in the hypotheses, it was controlled for in the data analyses.
Hypothesis 1

The first hypothesis stated that there would be an association between Controllability and Depression in FMS patients. After controlling for SF-MPQ scores, there was a moderate partial correlation \((r = .34, p < .05)\) and a total correlation of \((r = .41, p < .01)\) between Controllability (represents and inability to control) and the total Depression score on the CES-D. In comparison, a study of 158 of "normal" volunteer participants by Bruch and Belkin (2001) shows a smaller total correlation between Controllability and Depression \((r = -.21)\). A regression analysis was also run with Controllability as the independent variable and Depression as the dependent variable. Results showed that after the SF-MPQ was controlled for, Controllability explained 10% of the variance in the CES-D scale beyond on what the SF-MPQ accounted for, as can be seen on Table 4.

Hypothesis 2

The second hypothesis stated that there would be an association between Learned Helplessness and Depression in FMS patients. After controlling for SF-MPQ score, there was a large partial correlation \((r = .55, p < .01)\) between the RAI Learned Helplessness scale and the CES-D Depression scale. A regression analysis was also run with the RAI Learned Helplessness scale as the independent variable and the CES-D Depression scale as the dependent variable. Results showed that after the SF-MPQ scale was controlled for, the RAI Learned Helplessness scale explained 26% of the variance of the CES-D variance, which can be seen in Table 5.
**Hypothesis 3**

The third hypothesis stated that there would be an association between Learned Helplessness and Somatic and Retarded Activity. After controlling for the SF-MPQ scale, there was a moderate partial correlation \((r = .35, p < .05)\) between the RAI Learned Helplessness Scale and the Somatic/Retarded Activity scale. A regression analysis was also run with the RAI Learned Helplessness scale as the independent variable and the Somatic/Retarded Activity scale as the dependent variable. Results showed that after the SF-MPQ was controlled for, the RAI Learned Helplessness scale explained 10% of the Somatic/Retarded Activity scale variance, which can be seen in Table 6.
Table 1

*Descriptive Statistics*

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<td>Caucasian:</td>
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</tr>
<tr>
<td>Non-Caucasian:</td>
<td>35%</td>
<td>18</td>
</tr>
<tr>
<td><strong>Age</strong></td>
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<tr>
<td><strong>Gender</strong></td>
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<tr>
<td>Male:</td>
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<tr>
<td>Female:</td>
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### Education ordinal scale

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<td>Less than 7th Grade</td>
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<td>Junior High (9th Grade)</td>
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<tr>
<td>Partial High School (10th or 11th)</td>
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<td>High School Graduate</td>
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<td>Partial College (At least one year)</td>
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<td>College Degree</td>
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<td>Graduate Degree</td>
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### Marital Status

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<tr>
<td>Divorced</td>
<td>29%</td>
<td>15</td>
</tr>
<tr>
<td>Widowed</td>
<td>6%</td>
<td>3</td>
</tr>
<tr>
<td>Single, never married</td>
<td>8%</td>
<td>4</td>
</tr>
<tr>
<td>Not married, but living with mate</td>
<td>2%</td>
<td>1</td>
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### Occupation

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Percentage</th>
<th>Note</th>
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<tr>
<td>Machine worker, semiskilled worker:</td>
<td>2%</td>
<td>1</td>
</tr>
<tr>
<td>Skilled manual worker, craftsman police and fire services, military:</td>
<td>2%</td>
<td>1</td>
</tr>
<tr>
<td>Clerical/sales, small farm owner Teacher, low level manager:</td>
<td>62%</td>
<td>32</td>
</tr>
<tr>
<td>Mid-level manager or professional, military officer:</td>
<td>29%</td>
<td>15</td>
</tr>
<tr>
<td>Senior management, professional, Owner or CEO of large business:</td>
<td>6%</td>
<td>3</td>
</tr>
</tbody>
</table>

| Number of children in household | .62        | .99   |

Note. * The educational ordinal scale was based on a scale that ranged from 1 to 7. A person checked one of seven categories that best described their educational level. A score of 1 indicated a respondent with the least education and a score of 7 indicated the highest level of education.
Table 2

*Correlations Between the Overall RAI Scale and Individual items*

<table>
<thead>
<tr>
<th>Overall RAI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. My condition is controlling my life.</td>
</tr>
<tr>
<td>2. Managing my condition is largely my own responsibility.</td>
</tr>
<tr>
<td>3. I can reduce my pain by staying calm and relaxed.</td>
</tr>
<tr>
<td>4. Too often, my pain just seems to hit me from out of the blue.</td>
</tr>
<tr>
<td>5. If I do all the right things, I can successfully manage my condition.</td>
</tr>
<tr>
<td>6. I can do many things to cope with my condition.</td>
</tr>
<tr>
<td>7. When it comes to managing my condition, I feel I can only do what my doctor tells me to do.</td>
</tr>
<tr>
<td>8. When I manage my personal life well, my condition does not flare as much.</td>
</tr>
<tr>
<td>9. I have considerable ability to control my pain.</td>
</tr>
<tr>
<td>10. I would feel helpless if I couldn’t rely on other people for help with my condition.</td>
</tr>
<tr>
<td>11. Usually, I can tell when my condition will flare.</td>
</tr>
<tr>
<td>12. No matter what I do, or how hard I try, I just can’t seem to get relief from my pain.</td>
</tr>
<tr>
<td>13. I am coping effectively with my condition.</td>
</tr>
<tr>
<td>14. It seems as though fate and other factors beyond my control affect my condition.</td>
</tr>
<tr>
<td>15. I want to learn as much as I can about my condition.</td>
</tr>
</tbody>
</table>
### Table 3

**Correlations Between Factors Involved in Testing Hypotheses**

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>SES</th>
<th>ETH</th>
<th>MPQ</th>
<th>DEP</th>
<th>LH</th>
<th>IN</th>
<th>CON</th>
<th>SRA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SES</strong></td>
<td>.40**</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ETH</strong></td>
<td>.28</td>
<td>.10</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MPQ</strong></td>
<td>-.01</td>
<td>-.01</td>
<td>-.15</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DEP</strong></td>
<td>-.13</td>
<td>-.02</td>
<td>-.05</td>
<td>.36**</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LH</strong></td>
<td>.10</td>
<td>-.10</td>
<td>-.01</td>
<td>.45**</td>
<td>.62**</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IN</strong></td>
<td>-.07</td>
<td>.03</td>
<td>-.17</td>
<td>.18</td>
<td>.22</td>
<td>-.46**</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CON</strong></td>
<td>-.01</td>
<td>-.03</td>
<td>-.11</td>
<td>.30*</td>
<td>.41**</td>
<td>.42**</td>
<td>.90**</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td><strong>SRA</strong></td>
<td>-.06</td>
<td>-.16</td>
<td>-.10</td>
<td>.39**</td>
<td>.83**</td>
<td>.37**</td>
<td>-.00</td>
<td>.19</td>
<td>---</td>
</tr>
</tbody>
</table>

Note. SES = Socio-economic status, ETH = Ethnicity, DEP = Depression, LH = Learned Helplessness, IN = Internality, CON = Controllability, SRA = Somatic/Retarded Activity, MPQ = McGill Pain Questionnaire—Short Form. Ethnicity is measured by coding Caucasian as “1” and non-Caucasian as “0”.

**p < .01**

* **p < .05**
Table 4

Summary of Hierarchical Regression Analysis for Pain Severity and Controllability Variables Predicting Depression
\( (N = 52) \)

<table>
<thead>
<tr>
<th>Variable</th>
<th>( \beta )</th>
<th>( t )</th>
<th>( r )</th>
<th>( \Delta R^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPQ</td>
<td>.26</td>
<td>1.97</td>
<td>.36</td>
<td>.13</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CON</td>
<td>.33</td>
<td>2.50*</td>
<td>.31</td>
<td>.10</td>
</tr>
</tbody>
</table>

Note. MPQ = McGill Pain Questionnaire – Short Form, CON = Controllability Style, \( B = \) Standardized Coefficient Beta Weight, \( t = \) Two tailed \( t \)-Test, \( \Delta R^2 = \) change in \( R^2 \). \( R = .48, R^2 = .23, \) Adjusted \( R^2 = .20 \). A part correlation is used for the step 2 \( r \).

\( *p < .05 \)
Table 5

Summary of Hierarchical Regression Analysis for Pain Severity and Learned Helplessness Predicting Depression
(N = 52)

<table>
<thead>
<tr>
<th>Variable</th>
<th>β</th>
<th>t</th>
<th>r</th>
<th>ΔR²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPQ</td>
<td>.11</td>
<td>.85</td>
<td>.36</td>
<td>.13</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LH</td>
<td>.57</td>
<td>4.56**</td>
<td>.51</td>
<td>.26</td>
</tr>
</tbody>
</table>

Note. MPQ = McGill Pain Questionnaire - Short Form, LH = Learned Helplessness, B = Standardized Coefficient Beta Weight, t = Two tailed t-Test. AR² = change in R². R = .48, R² = .23, Adjusted R² = .20. A part correlation is used for the step 2 r.
*p < .05
**p < .01
Table 6

Summary of Hierarchical Regression Analysis for MPQ and Learned Helplessness Predicting Somatic and Retarded Activity
(N = 52)

<table>
<thead>
<tr>
<th>Variable</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$r$</th>
<th>$\Delta R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPQ</td>
<td>.23</td>
<td>1.69</td>
<td>.21</td>
<td>.15</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LH</td>
<td>.36</td>
<td>2.58*</td>
<td>.32</td>
<td>.10</td>
</tr>
</tbody>
</table>

Note. MPQ = McGill Pain Questionnaire – Short Form, LH = Learned Helplessness, $B$ = Unstandardized Coefficient Beta Weight, $t$ = Two tailed t-Test. $\Delta R^2$ = change in $R^2$. $R = .48$, $R^2 = .23$, Adjusted $R^2 = .20$. A part correlation is used for the step 2 $r$.

* $p < .05$
Discussion

The three proposed hypotheses were all supported. After controlling for pain severity, there were relationships between controllability and depression, between learned helplessness and depression, and between learned helplessness and decreased activity.

First, with regard to the relationship between controllability and depression, there certainly are other factors that influence a person’s depression, but controllability accounts for a unique percentage of the variance in depression. This conclusion fits with the well-documented theory that FMS patients feel out of control (Turk, Monarch & Williams, 2002). Depression continues to be a serious symptom for FMS patients and the more quickly and efficiently it is managed, the more satisfied the FMS patient will be. There are many potential clinical applications, but one that seems logical is to use a patient’s perception of control as a warning of depression. Non-depressed FMS patients could consistently fill out questionnaires measuring their perception of control when they visit their health care provider. Those who consistently perceive the world as out of their control can then be referred for cognitive-behavioral therapy to help prevent depression.

This study’s second finding was that learned helplessness is significantly related to depression. This information is a replication of a theory in a new population. It is well established that learned helplessness and depression are related, but it was necessary to understand the relationship in the field of FMS. This study supported the idea that learned helplessness and depression are related in FMS patients. The high degree of correlation between learned helplessness and depression suggests that learned helplessness is a significant problem for people with FMS. The correlations were evident in cardiovascular and RA populations as well (Shnek, Irvine, and Abbey, 2001; Smith, Peck, & Ward,
1990; and Smith et al., 1994). In a clinical situation, if a health care professional has a FMS patient who is depressed, there is a good chance that one of the driving forces is learned helplessness and this should be included in treatment recommendations.

The third main finding was that learned helplessness and somatic/retarded activity are related. Previous research suggests that those who are experienced learned helplessness would be likely to develop depressive symptoms, including physical manifestations of depression (Peterson, 1982). We also determined that learned helplessness can predict (with a degree of accuracy) somatic/retarded activity. This predictive ability also has clinical applications. A person who has experienced uncontrollable events, experienced helplessness and learned helplessness, may be at risk for having somatic complaints and reduced activity. A physician could recommend small amounts of exercise to increase the patient’s self-efficacy.

Limitations

The research design that was employed was cross-sectional and correlational. This non-experimental design does not let us show causality. Therefore, we do not know if any of the predictor variables actually predicted any of the outcomes that were seen. Another limitation is that the sample size was smaller than was expected. We originally set out for 100 questionnaires but only 52 were filled out at the Rheumatology clinic at Loma Linda University Medical Center. The reduction in the sample may have been because of a low response rate, but this is unclear; in any case, it may reduce the amount of confidence that we can have in extending the results to the population. Another limitation was internal consistency of the Learned Helplessness scale of the RAI. The
slightly lower internal consistently level reduces the confidence that we have in the cohesiveness of the scale and its ability to measure the assigned variable. Next the overall scale of the RAI, controllability, has little research on it. Further studies on validity and reliability need to be done to be confident of the results.

**Future Directions**

This study indicates several opportunities for further research. First, measuring FMS patients attributions with the Attributional Style Questionnaire (ASQ) or the less studied Health Attributional Style Questionnaire (HASQ) may give more information on the relationship of optimistic and pessimistic attributional style to depression. It would also be interesting to note the relationship of the RAI to the ASQ/HASQ. Another area to continue study is the amount and severity of uncontrollable events in a person’s life. This would include physical abuse, sexual abuse, major accidents, and serious illnesses. The amount and severity of uncontrollable events may correlate highly with the Controllability scale on the RAI.

**Conclusion**

Despite having the limitations described above, this study is important in that it helps describe the experience of having Fibromyalgia. More specifically, it helps describe different factors involved in FMS patients who have depression. It appears that the perception of control and learned helplessness play a role in determining depression and depressed activity. Furthermore, we have more evidence that cognitive-behavioral therapy would be an excellent part of a management strategy for FMS patients. While the
etiology of FMS is being debated, it is the hope of the researchers that the development of successful intervention strategies continue to be a priority in the research community.
References


