

Chapter #23

LIVING WITH A CHRONIC DISORDER: THE BENEFITS OF MINDFULNESS AND PSYCHOLOGICAL FLEXIBILITY

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ABSTRACT

Functional somatic symptom disorders (FSSD) and well-defined autoimmune disorders (AD) are common and have detrimental effects on physical and psychological wellness. Psychological flexibility involves a mindful focus on the present and the prioritization of thoughts, emotions, and behaviours that align with individual values and goals. Increased psychological flexibility is associated with better physical and psychological wellness and, thus, the purpose of the current study was to examine associations between mindfulness, psychological flexibility, and overall wellness. In this study, individuals with FSSDs (fibromyalgia, chronic fatigue syndrome) were compared to those with ADs (multiple sclerosis, rheumatoid arthritis) to determine how psychosocial factors affect wellness. In total, 642 participants completed an online questionnaire package to assess physical health, psychological wellness, and distress (anxiety, depression), psychological flexibility, and mindfulness. Results indicated that individuals with a FSSD reported greater severity of physical and psychological distress. Correlational analyses indicated that aspects of mindfulness and psychological flexibility were associated with greater wellness. Regression analysis indicated that focusing on personal values predicted greater life satisfaction.

Keywords: functional somatic symptom disorder, autoimmune disorder, psychological well-being, physical health mindfulness, psychological flexibility.

1. INTRODUCTION

For individuals facing incurable chronic illnesses, obtaining the highest possible quality of life is essential and depends upon physical and psychological wellness as well as optimal social functioning (McCabe & McKern, 2002). It is important to educate patients to help them learn and adopt effective coping strategies and improve access to physical and psychological support. Functional somatic symptom disorders (FSSD) are characterized by lasting bodily complaints, such as pain and fatigue, that do not have a pathological explanation (Henningsen, Zipfel, & Herzog, 2007). Although diagnosis is based on a process of symptom elimination (Henningsen et al., 2007), clear diagnostic criteria have been developed for the three most well-defined FSSD illnesses: fibromyalgia syndrome (FMS), chronic fatigue syndrome (CFS), and irritable bowel syndrome (IBS; Henningsen et al., 2007). CFS is categorized by persistent or relapsing debilitating chronic fatigue and other non-specific symptoms (e. g., muscle weakness, pain, cognitive deficits) that have no other underlying cause. FMS is characterized by chronic widespread pain (Wolfe et al., 2010); fatigue, cognitive impairments, headaches, abdominal pain or cramps, and depression are non-specific symptoms (Wolfe, Egloff, & Häuser, 2016). Given the wide variety of symptoms and lack of diagnostic tests, diagnosis of FSSDs is difficult and can result in patient frustration.

Although similar symptoms are associated with well-defined autoimmune diseases (AD), such as multiple sclerosis (MS) and rheumatoid arthritis (RA), clear medical tests support diagnosis. MS is an autoimmune disease characterized by chronic inflammation due to the immune system attacking the myelin sheaths of central nervous system axons (Compston & Coles, 2002), which causes lesions that can affect all central nervous system functions (Mohr & Cox, 2001). Although symptoms vary greatly, vision problems, loss of function and feeling in limbs, bladder and bowel incontinence, pain, and loss of balance are common (Jellinger, 1999). Rheumatoid arthritis (RA) is a chronic inflammatory joint disease caused by infiltration of joints by T cells, B cells, and monocytes, destroying cartilage and bone leading to inflammation and damage (Aletaha & Smolen, 2018). Symptoms include pain and swelling and misaligned joints (Sokka, Kautiainen, Möttönen, & Hannonen, 1999). Manifestations outside of joints can occur including rheumatoid nodules (firm subcutaneous lumps near bony prominences) and rheumatoid vasculitis (necrotizing inflammation of arteries; Aletaha & Smolen, 2018). Individuals who have symptoms of MS or RA are typically referred for medical tests, with diagnosis occurring soon after test results are available.

1.1. Modifiable factors targeting physical and psychological wellness

Assessments of physical wellness can include items that allow individuals to self-report their levels of pain, tiredness, nausea, fatigue, shortness of breath, and appetite, whereas assessments of psychological symptoms include items measuring levels of depression, anxiety, and overall well-being (Chang, Hwang, & Feuerman, 2000). Measuring physical health can include an assessment physical and emotional functioning and well-being, social contact, fatigue, pain, and perceptions about overall health (Hays & Morales, 2001). Subjective health-related quality of life can be assessed using self-report questionnaires, such as the Edmonton Symptom Assessment Scale (Chang et al., 2000) and RAND-36-item health survey (Vander Zee, Sanderman, Heyink, & de Haes, 1996). Generally, these self-report inventories are strongly associated with objective clinical measures of physical wellness (McCabe & McKern, 2002).

Satisfaction with life is a component of overall subjective well-being (Diener, Emmons, Larsen, & Griffin, 1985) that combines cognitive factors, in which life circumstances are assessed, and emotional factors, in which negative emotionality are assessed (Tay et al, 2015). Measures of satisfaction with life focus on the personal experience of being happy by assessing perceptions about one's life (Tay et al., 2015). Psychological well-being plays a role in a person's ability to maintain good physical health (Hays & Morales, 2001). Mental health problems (e.g., anxiety, depression) are often measured by researchers to establish if experienced psychological symptoms are associated with specific medical conditions and symptoms from these illnesses (e.g., fatigue and chronic pain).

One of the main goals of Cognitive Behavioral Therapy (CBT) is to decrease pain and distress and increase both social and physical functioning (Turk, Meichenbaum, & Genest, 1983). One CBT model is Acceptance and Commitment Therapy (ACT; Hayes, Luoma, Bond, Masuda, & Lillis, 2016). The goal of ACT is to increase psychological flexibility (Hayes et al., 2016), which is a person's ability to detect and acknowledge interfering thoughts, emotions, and physical sensations without acting on them (Wicksell et al., 2012). Psychological flexibility facilitates appropriate behaviours that are aligned with personal values and long term-goals (Wicksell et al., 2012).

The core processes underlying psychological flexibility include defusion, experiential avoidance and acceptance, contacting the present moment, self-as-context, values, and committed action (Manlick, Cochran, & Coon., 2013). Defusion refers to dissociating the individual from their internal thoughts and focuses on how a person's thoughts influence their behaviour (Hayes et al., 2016). Experiential avoidance and acceptance involve accepting one's internal experiences as part of the human experience, rather than trying to control them (Manlick et al., 2013). Contacting the present moment is described as complete awareness of the present moment, unlikely to be attained by individuals constantly fused with their thoughts and unaccepting of their inner experience. This process enables the individual to focus on appreciating themselves by discovering other valuable attributes. Self-as-context refers to perceiving oneself beyond the object of our inner experiences. Values are based according to the individual's personal needs and desires. Finally, committed action is described as actively choosing behaviours that would enhance one's life based on their values. Unlike in CBT, the ACT process is not focused on eliminating or changing negative thoughts; instead, an individual may have persistent negative thoughts and yet be able to interact flexibly with both positive and negative inner experiences to live a life that is in line with their core values (Kashdan & Rottenberg, 2010). This value-based action is beneficial to individuals living with chronic conditions such as pain (Wicksell, Ahlqvist, Bring, Melin, & Olsson, 2008).

Mindfulness is a component of psychological flexibility (Ramaci, Bellini, Presti, & Santisi, 2019), and is a personal process that involves a focus on the present moment (Droutman, Golub, Oganessian, & Read, 2018) that is accomplished by noticing surroundings, thoughts, feelings, and events, being nonreactive, being non-judgemental, and self-accepting (Droutman et al., 2018). It is both a regulated and maintained attention to existing sensory, emotional, and cognitive events that are changeable and transient, without allowing emotions to cloud judgement (Zeidan, Grant, Brown, McHaffie, & Coghill, 2012). Further, it can be developed by mental training, such as meditation, which changes how a person evaluates sensory events (Zeidan et al., 2012). Although research indicates positive associations between mindfulness and psychological flexibility, Masuda and Tully (2012) found that these constructs contribute uniquely to measures of psychological distress. Thus, it is important to consider the unique role of mindfulness and psychological flexibility in wellness.

Both mindfulness and psychological flexibility are associated with increased wellness. The strong positive relationship between mindfulness and satisfaction with life has been well-established (Kong, Wang, & Zhao, 2014). Geiger et al. (2016) found that mindfulness-based interventions improved multiple aspects of psychological wellbeing including anxiety, depression, stress, and pain acceptance. Mindfulness can improve pain management associated with chronic pain and reduce stress-related outcomes and disease in chronic illness populations (Creswell, Lindsay, Villalba, & Chin, 2019). After undergoing ACT, Wicksell and colleagues (2012) found improvements in self-efficacy, pain-related functioning, depression, anxiety, and psychological inflexibility in FMS patients. Among FMS patients, a decrease in psychological inflexibility facilitated improvement in pain disability (Wicksell et al., 2012).

1.2. Purpose of the study

Disease characteristics are largely unchangeable and can have a negative impact on well-being. Psychological flexibility and mindfulness are skills that can be taught and can improve physical and psychological wellness and decrease symptom severity in individuals with incurable chronic illnesses (Wicksell et al., 2012). Although these connections have

been established, this study is unique in that we compared the experiences of individuals diagnosed with two distinct types of chronic conditions: functional somatic symptom disorders and autoimmune disorders. Therefore, our primary goal was to examine if psychological flexibility and mindfulness predict physical and psychological wellness beyond the effects of disease characteristics and related symptoms, such as pain, depression, and anxiety. Our secondary goal was to examine whether mindfulness and psychological flexibility in individuals who suffer from different types of disorders.

2. METHODS

2.1. Participants

We recruited individuals diagnosed with FSSD (FMS, CFS) and AD (MS, RA) from online forums and support groups. Overall, 642 participants completed the study; however, many respondents reported comorbidities and thus, the resulting data analyses were based on 112 participants with only FMS (284 total), 82 with only CFS (218 total), 102 with only MS (121 total) and 105 with only RA (166 total). In all disorder categories, the majority of the participants were female ($n = 523$; 81.5%) and had received treatment for their illness. All participants were included in the analysis regardless of gender, and gender was controlled for when appropriate. In total, the FSSD sample included 194 ($M_{age} = 44.33$, $sd = 15.11$) and the AD sample included 207 ($M_{age} = 48.31$, $sd = 11.27$) participants. Participants with FSSD's were less likely to receive treatment (CFS: 63.6% and FMS: 86.4%) than those with MS (92.8%) and RA (93.1%). Regardless of illness, there was a drop of employment from the time of diagnosis to survey completion. Most participants lived in either Canada (25.7%) or the United States of America (39.3%), but a wide range of nationalities was demonstrated including Australia (5.3%), the United Kingdom (11.7%) and other countries (6.1%).

2.2. Measures

The **Edmonton Symptom Assessment Scale** (ESAS; Chang et al., 2000; $\alpha = .819$) was used to assess the severity of self-reported medical symptoms. The ESAS is a 9-item self-report scale in which the current severity of symptoms is rated on a 0 (not experienced) to 10 (most severe) scale. Items include physical symptoms such as pain and tiredness, and psychological symptoms such as depression, and well-being). ESAS: Physical was defined as the mean of the items focused on physical wellness (nausea, shortness of breath, appetite, pain, fatigue). The **Satisfaction with Life Scale** (SWLS; Diener et al., 1985; $\alpha = .879$) assesses global satisfaction with life. It contains five statements and uses a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree), with high scores indicating high satisfaction with life. The **Generalized Anxiety Disorder -7** (GAD-7; Spitzer, Kroenke, Williams, & Löwe, 2006; $\alpha = .819$) is a seven-item scale that assesses experienced anxiety symptoms in the last two weeks. Individual item scores range from 0 (not at all) to 3 (nearly every day). The **Patient Health Questionnaire Mood Scale** (PHQ-9; Martin, Reif, Klaiberg, & Braehler, 2006; $\alpha = .895$) was used to assess self-reported depression. Scores can be divided into four categories: severe (scores >20), moderately severe (15 – 19), moderate (10 – 14), mild (5 – 9), and minimal (<5). Participants rated their subjective depression in the last two weeks from 1 (not at all) to 7 (nearly half of all days) on nine items such as, “feeling down, depressed, or hopeless”. The **Adolescent and Adult Mindfulness Scale** (AAMS; Droutman et al., 2018; $\alpha = .800$) measures key components of mindfulness which includes a focus of the present moment (AAMS: AA), being nonreactive (AAMS: NonR), being non-judgmental (AAMS: NonJ), and self-aware (AAMS: SA). It consists of 24 statements

such as “I notice when my moods begin to change,” with individual scores ranging from 1 (never true) to 5 (always true), with higher scores indicating increased mindfulness. Psychological flexibility was assessed using the **Comprehensive Assessment of Acceptance and Commitment Therapy** processes (CompACT; Francis, Dawson, & Golijani-Moghaddam, 2016; $\alpha = .812$). This comprehensive measure of psychological flexibility is theorized using the ACT model (Hayes et al., 2016) and contains 23-items scored on a Likert scale from 1 (strongly disagree) to 7 (strongly agree), where high scores equate with high psychological flexibility. Subscale scores include Openness to Experience (CompACT: OE), Behavioural Awareness (CompACT: BA), and Valued Action (CompACT: VA).

2.3. Procedure

The study was approved by the University of New Brunswick Saint John Research Ethics Board. A survey package was created and distributed on Qualtrics, an online questionnaire platform. Participants were recruited via social media (e.g., Facebook) and disease specific information and support websites. Individuals were sent to a short description of the study and a link to the consent form. Once informed consent was provided, a set of demographic questions were asked. The remaining questionnaires were presented in random order. At the end of the study, participants were thanked for their participation and directed to another website where they could enter their name for a draw for a \$50 gift card (three will be awarded).

3. RESULTS

3.1. Statistical analysis

Means and standard deviations were calculated for relevant demographic variables (e.g., age, gender, employment status, time since diagnosis) and t-tests were used to determine if there were statistically significant differences between the two classes of disorders. Pearson's r was used to assess the associations between the predictor and outcome variables and Fishers r to z scores were calculated to assess differences in the strength of these correlations. To examine if mindfulness and psychological flexibility contributed to physical and psychological wellness, four hierarchical regressions were conducted. In both regressions, Block 1 included demographic variables (biological sex, age, illness category), Block 2 included measures of wellness depression (PHQ-9), anxiety (GAD-7), satisfaction with life (SWLS) or ESAS: Physical Total), and Block 3 included three mindfulness subscales (AAMS) or psychological flexibility (CompACT subscales).

3.2. Primary analyses

Overall, compared to the AD group, the FSSD group reported worse physical symptoms on the Edmonton Symptom Assessment Scale, with higher levels of Pain, Tiredness, Drowsiness, Nausea, Appetite Problems, and Shortness of Breath. In addition, compared to individuals diagnosed with an AD, individuals who reported a FSSD had greater depression (PHQ-9), lower life satisfaction (SWLS) as well as greater scores on mindfulness subscale, Acting with Awareness (see Table 1). Scores indicate important differences between the groups in terms of overall depression and life satisfaction. Relative to norms, individuals who have been diagnosed with a FSSD have moderate levels of depression (Martin et al., 2006) and life satisfaction that is lower than average (Diener et al., 1985).

Table 1.
Mean and standard deviation of Variables Associated with Physical and Psychological Wellness.

	Functional Somatic Symptom Disorders (FSSD)		Well-defined Autoimmune Disorders (AD)		<i>t</i>
	M	<i>s</i>	M	<i>s</i>	
SWLS: Life Satisfaction	2.73	1.21	3.31	1.49	-3.77***
PHQ-9: Depression	1.37	0.58	1.11	0.61	3.78***
GAD-7: Anxiety	1.39	0.78	1.23	0.76	1.76*
Edmonton Symptom Assessment Scale					
Total Scale Score	4.14	1.56	3.47	1.75	4.68***
Total Physical Symptom Severity	4.09	1.56	3.34	1.76	5.21***
Pain	5.12	2.35	4.36	2.71	2.56**
Tiredness	7.14	1.84	6.03	2.43	4.40***
Drowsiness	5.63	2.68	4.75	2.92	2.72**
Nausea	1.92	2.60	1.36	2.14	2.04*
Appetite	2.77	2.97	1.99	2.53	2.45*
Shortness of Breath	1.93	2.28	1.54	2.16	1.52
Adult Adolescent Mindfulness Scale					
Acting with Awareness (AA)	3.53	0.82	3.28	0.79	2.76**
Non-Reactivity (NonR)	2.95	1.17	3.07	1.19	-0.91
Non-Judging (NonJ)	3.23	0.87	3.36	0.81	-1.43
Self-Acceptance (SA)	3.57	1.00	3.74	0.86	-1.56
Comprehensive Assessment of Acceptance and Commitment Therapy					
Openness to Experience (OE)	3.99	1.17	4.03	0.95	-0.34
Behavioural Awareness (BA)	3.92	1.29	3.78	1.35	0.89
Value Added (VA)	2.89	0.98	2.87	1.00	0.14

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

There were statistically significant correlations between mindfulness, psychological flexibility, and wellbeing (see Table 2). AAMS-Self Acceptance was consistently associated with aspects of physical and psychological wellness for both FSSD and AD participants. For participants in both illness categories, AAMS: Non-Reactivity was inversely correlated with ESAS total score, depression, and anxiety. AAMS: Non-Judging was inversely associated with both depression and anxiety in FSSD participants and with anxiety in AD participants, suggesting that being non-judgemental of one's inner experiences may alleviate psychological distress. Although CompACT subscale scores were negatively correlated with physical and psychological symptoms for all participants, it is interesting to note that psychological flexibility was not associated with overall life satisfaction in participants who reported an FSSD. For individuals reporting an AD, higher life satisfaction was associated with AAMS:SA and all aspects of psychological flexibility. For individuals who reported an FSSD, the sole correlate of SWLS was CompACT: Value Added.

Table 2.
Correlations between AAMS and CompACT subscale scores and measures of physical and psychological well-being.

	ESAS Total	ESAS Physical Symptom Severity Total	GAD-7 Anxiety	PHQ-9 Depression	SWLS Life Satisfaction
FUNCTIONAL SOMATIC SYMPTOM DISORDER (FSSD)					
AAMS Subscales (Mindfulness)					
Acting with Awareness	.003	.018	.024	.086	.056
Non- Reactivity	-.405***	-.324***	-.495***	-.361***	.119
Non-Judging	-.096	-.055	-.261**	-.300***	-.033
Self-Acceptance	-.401***	-.267***	-.602***	-.520***	.156
CompACT Subscales (Psychological Flexibility)					
Openness to Experience	-.391***	-.217*	-.607***	-.428***	.160
Behavioural Awareness	-.378***	-.293***	-.450***	-.376***	.082
Value added	-.352***	-.215*	-.378***	-.396***	.410***
AUTOIMMUNE DISORDERS (AD)					
AAMS Subscales (Mindfulness)					
Acting with Awareness	-.074	-.070	-.116	-.080	.135
Non- Reactivity	-.229**	-.155	-.441***	-.344***	-.006
Non-Judging	-.093	-.090	-.171*	-.139	-.055
Self-Acceptance	-.453***	-.393***	-.570***	-.567***	.239**
CompACT Subscales (Psychological Flexibility)					
Openness to Experience	-.473***	-.417***	-.603***	-.523***	.375***
Behavioural Awareness	-.484***	-.445***	-.548***	-.528***	.316***
Value added	-.369***	-.299***	-.388***	-.404***	.502***

Note. *** $p < .001$, ** $p < .01$, * $p < .05$. ¹ High ESAS scores indicate more severe symptoms.

3.3. Prediction of severity of physical symptoms

To examine if mindfulness and psychological flexibility impact overall severity of physical symptoms, two hierarchical linear regressions were conducted (see Table 3). Block 1 variables included age, gender, and illness category (FSSD vs. AD), Block 2 variables assessed psychological wellness and distress and included depression (PHQ-9), anxiety (GAD-7), and life satisfaction (SWLS), and Block 3 included either AAMS subscales (regression 1) or CompACT subscales (regression 2). The first regression predicting ESAS: Physical Symptom Severity was statistically significant, $F(10, 268) = 15.070$, $p < .001$, $R^2 = .360$. Block 1 demographic variables contributed 7.8% of the variability; being younger and reporting an FSSD was associated with higher ESAS: Physical scores. Block 2 contributed 28.1% of the variability, with increased PHQ-9 and GAD-7 and lower SWLS

predicting higher ESAS: Physical scores. Block 3 was not statistically significant, indicating that mindfulness subscales did not predict severity of physical symptoms. The second regression predicting ESAS: Physical Symptom Severity was statistically significant, $F(9, 265) = 17.80, p < .001, R^2 = .377$. Block 1 contributed 8.1% of the variability; being female, being younger, and having an FSSD were associated with greater severity of physical symptoms. Block 2 contributed 27.8% of the variability; increased PHQ-9 and GAD-7 as well as lower SWLS was associated with higher ESAS: Physical Symptom Severity. Although Block 3, CompACT subscales, contributed an additional 1.8% of the variability, it was not statistically significant ($p = .06$).

Table 3.
Hierarchical Multiple Regression Predicting ESAS: Physical scores.

	<i>B</i>	β	<i>t</i>	<i>p</i>
Regression 1				
STEP 1				
Sex	-.678	-.109	-1.88	.061
Age	-.017	-.130	-2.22	.027
Illness Group	-.675	-.197	-3.36	<.001
STEP 2				
GAD-7: Anxiety	.632	.282	4.41	<.001
PHQ-9: Depression	.631	.224	3.22	.006
SWLS: Life Satisfaction	-.224	-.191	-3.44	<.001
STEP 3: AAMS				
Acting with Awareness	.042	.020	0.35	.730
Non- Reactivity	-.005	-.003	-0.05	.958
Non-Judging	.081	.039	0.60	.547
Self-Acceptance	-.058	-.031	-0.43	.669
Regression 2				
STEP 1				
Sex	-.774	-.123	-2.10	.036
Age	-.016	-.125	-2.13	.034
Illness Group	-.680	-.198	-3.36	<.001
STEP 2				
GAD-7: Anxiety	.637	.286	4.34	<.001
PHQ-9: Depression	.609	.216	3.09	.002
SWLS: Life Satisfaction	-.227	-.193	-3.46	<.001
STEP 3: CompACT				
Openness to Experience	-.165	-.101	-1.50	.134
Behavioural Awareness	.207	.160	2.58	.010
Value added	-.071	-.041	-0.71	.484

Note. High scores on ESAS indicate lower levels of functioning.

3.4. Prediction of satisfaction with life

Two hierarchical linear regressions were conducted to assess how mindfulness and psychological flexibility impacted satisfaction with life. As above, Block 1 variables included disorder type, gender, and age, with ESAS Total Physical Symptom Severity Score entered

in Block 2, and AAMS subscales (regression 1) or CompACT subscales (regression 2) entered in Block 3 (see Table 4). The first regression to assess the effects of aspects of mindfulness on psychological wellbeing (SWLS) was statistically significant, $F(8, 277) = 9.69, p < .001, R^2 = .21.9$. Block 1 contributed 5.8% of the variability in SWLS; being female and having a FSSD was associated with lower SWLS. Block 2 contributed 13.1% of the variability, with higher ESAS: Physical Symptom Severity predicting lower SWLS. AAMS Subscales in Block 3 contributed an additional 2.9% of the variability; higher AAMS Self-Acceptance predicted SWLS. The second regression to assess the effects of psychological flexibility was also statistically significant, $F(7, 269) = 18.42, p < .001, R^2 = .324$. Block 1 contributed 4.8% of the variability in SWLS; individuals who reported a FSSD had lower Satisfaction with Life scores. Block 2 contributed 12.8% of the variability, with higher ESAS: Physical predicting lower SWLS. Block 3 contributed an additional 14.6% of the variability, with CompACT: VA adding significantly to the model. Taken together, these results indicate that, after controlling for demographic variables and factors associated with physical wellness, the value-added component of psychological flexibility predicted greater life satisfaction.

Table 4.
Hierarchical Multiple Regression Predicting Satisfaction with Life Scores.

	<i>b</i>	β	<i>t</i>	<i>p</i>
Regression 1				
STEP 1				
Sex	-.699	-.132	-2.273	.024
Age	.005	.043	.731	.465
Illness Group	.595	.202	3.448	<.001
STEP 2				
ESAS: Physical Symptom Severity	-.327	-.378	-6.751	<.001
STEP 3: AAMS				
Acting with Awareness	.114	.064	1.009	.314
Non- Reactivity	-.027	-.022	-.338	.736
Non-Judging	-.208	-.119	-1.661	.098
Self-Acceptance	.289	.185	2.597	.010
Regression 2				
STEP 1				
Sex	-.620	-.115	-1.946	.053
Age	.006	.051	.847	.398
Illness Group	.541	.185	3.091	.002
STEP 2				
ESAS: Physical Symptom Severity	-.319	-.374	-6.512	<.001
STEP 3: CompACT				
Openness to Experience	.131	.095	1.485	.139
Behavioural Awareness	-.047	-.042	-.664	.507
Value added	.547	.369	6.656	<.001

4. DISCUSSION

The goal of the current study was to determine how psychological flexibility and mindfulness were associated with greater physical and psychological wellness in individuals diagnosed with chronic FSSD and AD. Although autoimmune diseases, such as MS and RA, can be diagnosed using specific medical tests, the diagnosis of a FSSD involves a method of exclusion via symptom analysis, resulting in a longer time to diagnosis. The uncertainty in diagnosis and ambiguous treatment strategies can have detrimental effects on physical and psychological wellness (Åsbring & Näravänen, 2002). When compared to the general population individuals with a FSSD have moderate levels of depression (Martin et al., 2006) and lower than average life satisfaction (Diener et al., 1985). Comparably, in this study, individuals with FSSD reported more physical and psychological symptoms and had lower subjective well-being than those diagnosed with an AD. Individuals with a FSSD had SWLS scores that were significantly lower than individuals reporting an AD, and relative to norms, the scores of individuals with an FSSD were <20, indicating problems in at least one area of their life (likely their health; Diener, n.d.).

Certain aspects of mindfulness, including being non-reactive and self-accepting appear to be important to understanding the relationship between physical symptoms, psychological distress, and overall subjective well-being across both illness groups. T-tests indicated no statistically significant differences between the illness groups in mindfulness, except for the mindfulness subscale measuring being present and focusing on the current moment, in which individuals with FSSD made more use of this aspect of mindfulness, which is defined by an awareness of surroundings, thoughts, feelings, and events (Droutman, 2018). Despite the moderate correlations between mindfulness subscales and wellness, regression analyses indicated that mindfulness did not predict overall physical symptom severity and only the self-acceptance subscale was a statistically significant predictor of life satisfaction. At the correlational level, current results partially replicated Zabat-Zinn (1982) who reported that use of a mindfulness, stress, and relaxation program in chronic pain patients who did not improve from conventional treatments had a decrease in pain, number of physical symptoms, a decrease in psychiatric symptoms and an overall improved mood.

Correlational analyses indicated that aspects of psychological flexibility scores were associated with lower severity of physical and psychological symptoms and, for individuals diagnosed with an AD, greater life satisfaction. Living in accordance with one's values (valued action component of psychological flexibility) was important in predicting subjective well-being (SWLS), which replicates Proctor and Best (2019) who examined the association between CompACT and wellness in brain injury patients. These results suggest that different types of psychological flexibility are indicative of different aspects of health and suggest that CompACT training should focus on the complex interaction between overall wellness and psychological flexibility. The value-based action aspect of ACT has been shown to be beneficial to individuals living with chronic conditions such as pain (Wicksell et al, 2008). Given that disease characteristics are largely unchangeable and can have a negative impact on wellbeing, focusing on psychological flexibility as a modifiable factor could lead to beneficial changes. Although mindfulness and psychological flexibility did not predict overall physical symptom severity, future research could focus on examining the complex interplay between physical and psychological wellness. Individuals with chronic conditions could receive training that could ultimately improve their physical and psychological wellness.

5. DIRECTIONS FOR FUTURE RESEARCH

Having an incurable chronic illness is detrimental to well-being because of both the physical and psychological impacts of illness. These negative effects are exacerbated in those facing more than one long-term medical diagnosis. Therefore, examining the associations between medical and psychological comorbidities and psychological flexibility could serve to be especially important to improve a person's well-being when they have been diagnosed with more than one illness. Further, although the effects of mindfulness and psychological flexibility-based training have been examined in chronic illness populations, a comparison of different illness groups (e.g., FSSD and AD) has not been performed. Examining these effects in a longitudinal research design rather than in cross-sectional research would prove to be beneficial to observe how these relationships change with time after diagnosis.

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KEY TERMS & DEFINITIONS

Functional Somatic Symptom Disorder (FSSD): are a class of illnesses characterized by persistent and chronic bodily complaints that do not have an identifiable explanation.

Psychological Flexibility: involves a focusing on the present moment and the prioritization of thoughts, emotions, and behaviours that align with an individual's values and goals.

Mindfulness: involves focussing on the present moment by noticing surroundings, thoughts, feelings, and events, being nonreactive, being non-judgemental, and self-accepting.

Fibromyalgia (FMS): a type of FSSD that is characterized by chronic widespread muscle and joint pain.

Chronic Fatigue Syndrome (CFS): a type of FSSD that is characterized by severe and chronic fatigue that does not improve with rest and interferes with daily functioning.

Multiple Sclerosis (MS): is a chronic inflammatory disease affecting myelin sheaths on axons causing lesions or plaques and can affect all functions of the central nervous system.

Rheumatoid Arthritis (RA): is a chronic inflammatory joint disease that is caused by damage from immune cells to the synovial membrane of joints, destroying cartilage and bone leading inflammation and damage, and manifestations outside of joints such as cardiovascular disease.

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