

From Department of Clinical Neuroscience
Karolinska Institutet, Stockholm, Sweden

INTERNET-BASED EMOTIONAL AWARENESS AND EXPRESSION THERAPY FOR FUNCTIONAL SOMATIC DISORDERS

Daniel Maroti



**Karolinska
Institutet**

Stockholm 2023

All previously published papers were reproduced with permission from the publisher.

Published by Karolinska Institutet.

Printed by Universitetservice US-AB, 2023

© Daniel Maroti, 2023

ISBN 978-91-8016-895-3

Internet-based Emotional Awareness and Expression Therapy for Functional Somatic Disorders

THESIS FOR DOCTORAL DEGREE (Ph.D.)

By

Daniel Maroti

The thesis will be defended in public at Rockefeller, Karolinska Institutet, Stockholm, Sweden,
27th of January 2023 at 13:00.

Principal Supervisor:

Robert Johansson, Ph.D.
Associate Professor
Karolinska Institutet
Department of Clinical Neuroscience
Division of Psychology
and
Stockholm University
Department of Psychology

Co-supervisor(s):

Brjáll Ljótsson, Ph.D.
Professor
Karolinska Institutet
Department of Clinical Neuroscience
Division of Psychology

Mark A. Lumley, Ph.D.
Professor
Wayne State University, USA
Department of Psychology

Peter Lilliengren, Ph.D.
Assistant Professor
Stockholm University
Department of Psychology

Indre Bileviciute-Ljungar, M.D., Ph.D.
Associate Professor
Karolinska Institutet
Department of Clinical Sciences
Division of Danderyd Hospital

Opponent:

Per Fink, M.D., Ph.D.
Professor
Århus University
The Research Clinic for Functional Disorders

Examination Board:

Steven Nordin, Ph.D.
Professor
Umeå University
Department of Psychology

Sophia Åkerblom, Ph.D.
Associate Professor
Lund University
Department of Psychology

Tobias Lundgren, Ph.D.
Associate Professor
Karolinska Institutet
Department of Clinical Neuroscience
Division of Psychology

In memory of my mother, who was both a physician and a patient at the same oncology clinic.

POPULAR SCIENCE SUMMARY IN ENGLISH

Patients with Functional Somatic Disorders (FSD) are common in primary care and the condition has a significant impact on the person's life. Few patients with FSD receive adequate care, let alone effective treatment. The studies in this thesis present and evaluate the psychodynamically informed treatment Emotional Awareness and Expression Therapy (EAET) for patients with FSD. Study I found that an internet-based version of EAET (I-EAET) could be implemented in a Swedish context and was positively received and considered credible by participants. The treatment was associated with an alleviation of somatic symptoms and had no significant side effects. Study II showed that an increased ability to process emotions was associated with reduced physical symptoms. Study III demonstrated that the findings of Studies I and II could be partially reproduced using a controlled design. Participants reported fewer somatic symptoms immediately after EAET, as well as at four-month follow-up, compared with a wait list control. Once again, an increased ability to deal with unprocessed emotions was associated with reduced somatic symptoms, consistent with the EAET model. Study IV described treatment principles that may be relevant in I-EAET. The conclusion of this dissertation is that I-EAET is a feasible, credible, and a quite effective and safe treatment that can be carried out in a population fulfilling the criteria for FSD. In the future it is important to continue to develop better psychological treatments for patients with FSD, but also to better clarify which patients benefit most from EAET.

POPULÄRVETENSKAPLIG SAMMANFATTNING PÅ SVENSKA

Patienter med funktionella somatiska syndrom (FSD) utgör en av de vanligaste patientgrupperna i primärvården och tillstånden påverkar livet på ett avgörande sätt. Få patienter med funktionella somatiska syndrom får ett fullgott bemötande och än färre genomgår verksam behandling. Studierna i den här avhandlingen presenterar och utvärderar den psykodynamiskt inspirerade korttidsbehandlingen Emotional Awareness and Expression Therapy (EAET). I studie I framkom att en internet-administrerad version av EAET gick att genomföra i ett svenskt sammanhang. Behandlingen togs emot positivt och ansågs trovärdig av deltagarna, var associerad med en minskning av kroppsliga symtom och hade inga avgörande biverkningar. Studie II kunde visa på att en ökad förmåga att bearbeta oprocessade känslor hade ett samband med minskade kroppsliga symtom. I studie III framkom att fynden från studie I och II delvis kunde reproduceras i en kontrollerad design. Deltagarna rapporterade färre kroppsliga symtom direkt efter EAET, samt vid fyra månaders uppföljning, jämfört med en väntelistekontroll. Återigen framkom att en ökad förmåga att bearbeta oprocessade känslor hade ett samband med minskade kroppsliga symtom, vilket ligger i linje med EAET:s behandlingsmodell. Studie IV beskriver behandlingsprinciper som kan vara relevanta i I-EAET. Slutsatsen av denna avhandling är att I-EAET är en genomförbar, trovärdig och ganska effektiv och säker behandling för personer som uppfyller kriterierna för FSD. I framtiden är det viktigt att fortsätta att utveckla bättre psykologiska behandlingar för patienter med FSD, men också att bättre klargöra vilka patienter som gynnas mest av EAET.

ABSTRACT

Background: Patients with Functional Somatic Disorders (FSD) make up one of the largest and most challenging patient groups in primary care. FSD are characterized by physical symptoms that have a major impact on the person's life and usually have a chronic course. Somatic and psychiatric comorbidity is common. Few patients with FSD receive adequate care, which can lead to frustration with the healthcare system. Moreover, medical treatment, such as surgery or pharmacological therapy, has at best limited efficacy or at worst iatrogenic effects. Among psychological treatments, cognitive behavioral therapy has been most extensively studied. Research indicates small effect sizes with some effects tending to disappear at follow-up. New psychological treatment avenues are developing in the field, with one of them being the short-term treatment known as Emotional Awareness and Expression Therapy (EAET). EAET is based on a psychodynamically informed treatment model that underlines the importance of emotional processing of stressful life events as one possible vehicle of change in FSD.

Aims: The major aim of the thesis was to develop and evaluate an internet-based EAET (I-EAET) for participants with FSD while exploring emotional processing as a potential mediator in I-EAET. Specific aims of Study I were to develop I-EAET and ascertain its feasibility and credibility in patients with FSD. Study II aimed at investigating emotional processing as a potential mediator in I-EAET. The aim of Study III was to do more rigorous testing of I-EAET where participants were randomized to either I-EAET or a wait list control, to investigate if I-EAET was more effective than the control in reducing somatic symptoms. A secondary aim was to study emotional processing as a mediator of treatment effects within the trial. Study IV aimed at describing the implementation of main treatment principles in I-EAET.

Methods: Study I was an uncontrolled trial of I-EAET assessing treatment credibility, feasibility, initial efficacy, and possible negative effects with pre-post and 4-month follow-up assessments. Study II encompassed a mediational analysis using linear mixed models to study changes in emotional processing capacity and somatic symptom reduction with data from Study I. Study III was a two-arm randomized controlled trial, comparing 10-week of I-EAET to a wait list control, where the primary outcomes were reductions of somatic symptoms and pain at post-treatment and 4-month follow-up. Moreover, a mediation analysis of emotional processing with depression as a competing mediator was conducted. Study IV was a theoretical review with descriptions of text-based interactions between internet therapists and participants from Study I and III.

Results: Study I indicated that I-EAET was feasible, credible, and associated with a decrease in somatic symptoms. Study II showed that facets of improved emotional processing capacity

were associated with decreases in somatic symptoms in I-EAET. In Study III, I-EAET decreased somatic symptoms at both post-treatment and 4-month follow-up compared with controls. The effect sizes were small to moderate ($d = 0.44$ at post-treatment and $d = 0.46$ at follow-up). Moreover, participants in I-EAET had lower pain intensity at post-treatment ($d = 0.36$), although the effect did not remain at follow-up. Even when using depression as a competitive mediator, a facet of emotional processing mediated the treatment effect on somatic symptoms. In contrast to previous work on internet-delivered treatments, where text material has been proposed to be the most important treatment mechanism, Study IV described a therapeutic alliance in I-EAET that might foster or hinder emotional processing.

Conclusions: I-EAET is a promising treatment for FSD (Studies I–IV). It is feasible, credible, and has acceptable negative effects (Studies I and III). Small to moderate between effect sizes of somatic symptom reduction was demonstrated, both post-treatment and at 4-month follow-up in Study III. The effect of I-EAET was partially mediated by increased emotional processing; when feelings became less intrusive and overwhelming, somatic symptoms tended to reduce (Studies II and III). Important treatment principles of I-EAET include using the therapeutic alliance to foster and deepen emotional processing in treatment (Study IV). Future research should be performed to corroborate these results and compare I-EAET to active treatments, preferably in routine care. Moreover, future research should refine and develop I-EAET further and distinguish and focus on the patients who respond best to I-EAET, to enhance treatment outcomes.

LIST OF SCIENTIFIC PAPERS

- I. **Maroti, D.**, Ek, J., Widlund, R-M., Schubiner, H., Lumley, M. A., Lilliengren, P., Bileviciute-Ljungar, I., Ljotsson, B., & Johansson, R. (2021). Internet-administered emotional awareness and expression therapy for somatic symptom disorder with centralized symptoms: A preliminary efficacy trial. *Frontiers in Psychiatry*, 12, 620359. <https://doi.org/10.3389/fpsy.2021.620359>
- II. **Maroti, D.**, Ljótsson, B., Lumley, M. A., Schubiner, H., Hallberg, H., Olsson, P-Å., & Johansson, R. (2021). Emotional processing and its association to somatic symptom change in emotional awareness and expression therapy for somatic symptom disorder: A preliminary mediation investigation. *Frontiers in Psychology*, 12, 712518. <https://doi.org/10.3389/fpsyg.2021.712518>
- III. **Maroti, D.**, Lumley, M. A., Schubiner, H., Lilliengren, P., Bileviciute-Ljungar, I., Ljótsson, B., & Johansson R. (2022). Internet-based emotional awareness and expression therapy for somatic symptom disorder: A randomized controlled trial. *Journal of Psychosomatic Research*, 22;163:111068. <https://doi.org/10.1016/j.jpsychores.2022.111068>
- IV. **Maroti, D.**, Hallberg, H., Lindqvist, K., & Mechler, J. (2022). Using psychodynamic principles in guided internet-delivered therapy (IPDT). *Psychoanalytic Psychotherapy* (ahead of print), 1–21. <https://doi.org/10.1080/02668734.2022.2124441>

SCIENTIFIC PAPERS NOT INCLUDED IN THE THESIS

Maroti, D. & Johansson, R. (2021). Is cognitive change necessary to alleviate symptoms in patients with functional somatic syndrome? *Frontiers in Psychiatry*, 12, 781083. <https://doi.org/10.3389/fpsy.2021.781083>

Maroti, D., Axelsson, E., Ljótsson, B., Andersson, G., Lumley, M. A., & Johansson, R. (2022). Psychometric properties of the emotional processing scale in individuals with psychiatric symptoms and the development of a brief 15-item version. *Scientific Reports*, 12(1), 10456. <https://doi.org/10.1038/s41598-022-14712-x>

TABLE OF CONTENTS

1	INTRODUCTION.....	1
2	LITERATURE REVIEW	3
2.1	Difficulties with nomenclature and diagnosis of patients with medically unexplained symptoms	3
2.1.1	Leaving the “either or” – somatic symptom disorder	5
2.1.2	Functional somatic disorders	6
2.1.3	Assessment of functional somatic disorders in emotional awareness and expression therapy	6
2.2	Functional somatic disorders: prevalence, comorbidity, quality of life, and consequences	7
2.3	Psychological treatment models of FSD.....	9
2.3.1	Cognitive behavioral therapy	9
2.3.2	Psychodynamic treatment models	10
2.4	Internet-based psychological treatments.....	16
2.5	Summary of the research field and its knowledge gaps	16
3	RESEARCH AIMS	19
3.1	General aims	19
3.2	Aim – Study I	19
3.3	Aim – Study II	19
3.4	Aim – Study III.....	19
3.5	Aim – Study IV	19
4	MATERIALS AND METHODS	21
4.1	Designs, assessment, and analyses.....	21
4.1.1	Study I.....	21
4.1.2	Study II	21
4.1.3	Study III.....	22
4.1.4	Study IV.....	22
4.2	Measures of central importance	22
4.3	Participants in Studies I–IV.....	23
4.4	Development of I-EAET	24
4.5	Ethical concerns.....	26
4.5.1	Ethical concerns regarding inclusion/exclusion	26
4.5.2	Ethical concerns regarding risk of harm or deterioration	27
4.5.3	Ethical concerns regarding respect for autonomy	28
5	RESULTS.....	29
5.1	Study I.....	29
5.2	Study II	29
5.3	Study III	29
5.4	Study IV	30
6	DISCUSSION	33
6.1	A need for continued treatment development.....	33

6.2	Emotional processing as a mechanism of change in EAET for FSD	35
6.3	Difficulties finding an adequate diagnosis when treatment is informed by EAET	37
6.3.1	The generalizability of the findings	38
7	CONCLUSIONS.....	41
8	POINTS OF PERSPECTIVE	43
9	ACKNOWLEDGEMENTS.....	45
10	REFERENCES.....	47

LIST OF ABBREVIATIONS

FSD	Functional somatic disorders
SSD	Somatic symptom disorder
IBS	Irritable bowel syndrome
DSM	Diagnostic and statistical manual of mental disorders
EAET	Emotional awareness and expression therapy
I-EAET	Internet-based emotional awareness and expression therapy
IPDT	Internet-based psychodynamic therapy
CBT	Cognitive behavioral therapy
ICBT	Internet-based cognitive behavioral therapy
EPM	Emotional processing model
EPS-25	Emotional Processing Scale-25
PHQ-15	Patient Health Questionnaire 15

1 INTRODUCTION

When does an interest in a subject arise? Was it when I had a friend who was falling ill with chronic fatigue syndrome and, despite my efforts to help, had fatigue that was crippling and made him withdraw more and more from the world? Or was it when I was diagnosed with medically unexplained iron deficiency during a separation? Or did the interest arise earlier? Seeing my father working late nights, reading in his office, trying to figure out why certain patients with asthma, who also complained of chest pain, did not respond to his medical treatment? It is not easy to know.

Research into functional somatic disorders is intriguing. Not only does psychological treatment of patients with distressing somatic symptoms stretch back to the early days of psychotherapy, but research in this area is also full of debate, controversy, and some contradictions. The criteria for diagnosis patients with distressing somatic symptoms change continually and there is no consensus on how best to describe these patients. There are long-standing debates for example on whether psychological treatment should be used, with substantial impact on both patients, researchers, and society. Further, there are philosophical questions on for example mind-body dualism.

Although this dissertation aims to be scientifically “neutral,” it is not. It represents a point-of-perspective where psychological theory has informed both the diagnoses used, the treatment employed (Emotional Awareness and Expression Therapy), and the measurements made. I believe that this perspective can contribute to the field, although of course not everyone will agree.

Gustavsberg, December 21, 2022

2 LITERATURE REVIEW

A 45-year-old woman has been on sick leave for more than a year for back pain. It is her sixth visit to the primary care center and she appears tense, squirming in her chair, as she tells the doctor that the pain now has spread to several parts of the body, affecting her neck and shoulders as well. The woman has undergone two major medical examinations. An MRI of her back did not reveal any significant abnormalities and the results were considered normal. Extended blood tests all came back normal. The woman has been prescribed physiotherapy and massage, as well as a wide range of pain medications, some of which provide temporary relief. But for the most part, the pain lingers, recurring day after day. She has become crippled by the pain, now only being able to do basic household chores and has started to catastrophize about becoming wheelchair-bound. When asked, she says that her husband left her during the previous year and that her mother is sick and demanding. Still, she denies being depressed.

How would one diagnose this woman's suffering? Is her pain best described as *medically unexplained*? All investigations did come back "normal". Or is her pain perhaps an example of a psychiatric condition, such as a *somatoform pain* condition? She is obviously troubled, but not depressed, and the pain cannot be linked to structural deficits. Or is it better to describe her suffering as a condition involving both somatic symptoms and psychological reactions such as in *somatic symptom disorder* or *functional somatic disorder*? As we will see, differing nomenclature has been used to describe patients with distressing somatic symptoms.

2.1 DIFFICULTIES WITH NOMENCLATURE AND DIAGNOSIS OF PATIENTS WITH MEDICALLY UNEXPLAINED SYMPTOMS

To study something, one needs to be clear about what the object of study is. This might seem self-evident, but the nomenclature is not always consistent or precise as regards to patients with distressing somatic symptoms accompanied by impairment or disability. Not only have different terms been used in the past, but different classifications also highlight different aspects of the patients' presentations. In Table 1, the nomenclature for patients with distressing somatic symptoms is summarized with two important distinctions applied; the first being if it is important to specify if the somatic symptoms are medically unexplained or not and the second being if psychological features can be part of the diagnosis. There are merits and drawbacks to each classification.

Table 1. Part of a schematic nomenclature for patients with distressing somatic symptoms.

		Psychological features present	
		YES	NO
Requirement of being medically unexplained	YES	Conversion disorder* [1] Functional somatic disorder** [2]	Functional somatic syndromes (e.g., IBS) [3] Medically unexplained symptoms [4] Bodily distress syndrome [5]
	NO	Somatic symptom disorder [1] Bodily distress disorder [6]	–

* Psychological features are not part of the definition, but somatic symptoms are believed to be part of a psychiatric presentation. ** Psychological features can be specified but do not have to be part of the presentation.

As seen in Table 1, one important distinction is whether somatic symptoms can be attributed to a known medical disease or psychiatric disorder. When a physician and a psychiatrist have assessed a patient and not been able to attribute somatic symptoms to any known disease or disorder, the term *medically unexplained symptoms* may be used [4]. Studies have shown that 40–49% of patients presenting at primary care units have at least one medically unexplained symptom, such as chronic pain or disabling fatigue [7]. Using this definition risks creating a very wide study population and it is not clear that all these patients share characteristics and that patients with medically unexplained symptoms should be lumped together [8]. An attempt to further specify *medically unexplained symptoms* has been made using the term *functional somatic syndromes* [3].¹ The characteristics of a functional somatic syndrome lie within the occurrence of a set of somatic symptoms in a single bodily domain. A typical example is irritable bowel syndrome (IBS), where patients present with a set of abdominal symptoms such as stomach pain, bloating, diarrhea, etc. IBS is not believed to be medically explained, as no specific biological tests have been identified to diagnose the illness [11]. Instead, IBS is defined as a set of somatic abdominal symptoms where known medical causes have been ruled out

¹ Some researchers argue that patients with medically unexplained somatic symptoms have more shared characteristics than differences [3,9], with some studies showing overlap with up to 95% of patients fulfilling criteria for some functional somatic syndromes such as IBS or fibromyalgia [10]. In such cases, they could be sorted under the same umbrella term, functional somatic syndromes.

[11]. The same reasoning applies to other examples of functional somatic syndromes, e.g., fibromyalgia and chronic fatigue syndrome [3].

There have been other attempts to explain what characterizes patients with somatic symptoms that are not medically explained. Sometimes, ruling out a medical disease leads to the conclusion that the symptoms are of psychological origin [12]. In the case of a *conversion disorder*, this is the essence of the definition, where certain neurological symptoms (e.g., paralysis, muscle weakness) are believed to be part of a psychiatric disorder [1]. This is also the case for patients with *somatoform disorders* [13].² In for example somatoform pain disorder, patients presenting with disabling pain are characterized in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) as having a psychiatric disorder, based solely on the fact that the pain symptoms are not better explained by a verifiable disease or another psychiatric disorder such as depression or anxiety [13]. This approach has been criticized as potentially highly stigmatizing for the patients [16] and the term somatoform disorder has been abandoned in the DSM-5.

The attempt to explain distressing somatic symptoms as part of *either* a medical disease *or* a psychiatric disorder have sometimes led to polarization, in both society in general [17] and the scientific community [18–22].

2.1.1 Leaving the “either or” – somatic symptom disorder

According to the DSM-5, patients with somatic symptom disorder (SSD) can have somatic symptoms that are either part of a medically explained condition or not [1]. The significance is not the proposed etiology, but the duration of the somatic symptoms (typically more than six months) and the psychological features accompanying the somatic symptoms (see Table 1). In SSD, patients have one or more chronic somatic symptoms that are distressing or cause significant disruption of daily life. Moreover, patients must present with dysfunctional or disproportionate cognitive, emotional, and behavioral responses, such as being persistently preoccupied with concerns about one’s symptoms. In other words, the core of the SSD diagnosis is the cooccurrence of somatic symptoms, whether medically explained or not, and psychological reactions to the symptoms. This stands in contrast to diagnoses such as functional

² Somatoform disorders in the DSM-IV include somatization disorder (requiring the presence of a total of eight somatic symptoms) and undifferentiated somatoform disorder (requiring only one medically unexplained symptom) [13]. Critics have argued that the former is too restrictive and the latter too inclusive [14], resulting in differing research criteria such as “abridged somatization” (requiring 4–6 somatic symptoms) or “multisomatoform disorder” [15] (requiring three current symptoms and a history of somatic symptoms).

somatic syndromes, which should be medically unexplained but do not require psychological features (see Table 1).³

2.1.2 Functional somatic disorders

According to representatives of the EURONET-SOMA network, *functional somatic disorders* (FSD) is an umbrella term which includes patients with “persistent and troublesome physical symptoms fitting characteristic symptom patterns accompanied by impairment or disability” [2]. Patients with FSD fall into three groups. One group encompasses patients with a particular bothersome symptom (e.g., back pain, nausea). Another group has clusters of symptoms that appear primarily in one bodily system (e.g., a functional somatic syndrome like IBS). The third group has numerous bothersome somatic symptoms across multiple organ systems. To establish a diagnosis of FSD, one needs to rule out medical or psychiatric diagnoses that could explain the somatic symptom/s and determine whether the characteristic symptom patterns occur in addition to a disease. Once this is done, it is important to specify if psychological features that cause distress are present or not. One possibility is to diagnose the presence of SSD. However, psychological attributes do not preclude disproportionate thoughts, feelings, or behaviors related to symptoms, but include all relevant psychological variables that can have an impact on somatic symptoms.

2.1.3 Assessment of functional somatic disorders in Emotional Awareness and Expression Therapy

In this dissertation, the term “functional somatic disorders” (FSD) is used because it has the best fit with the treatment model of Emotional Awareness and Expression Therapy (EAET, see Figure 1). First, in EAET it is considered important to identify chronic distressing somatic symptoms. Second, the model places emphasis on differential diagnosis, i.e. *ruling out* patients with somatic symptoms attributed to somatic disease and including only patients with medically unexplained symptoms or functional somatic syndromes [26,27]. For example, fatigue as part of depression or iron deficiency should be ruled out. Third, EAET requires *ruling in* several psychosocial variables – not just disproportionate thoughts, feelings, and behaviors related to the somatic symptoms – as an important characteristic of patients with medically unexplained symptoms [28,29]. It is especially important to investigate patterns of symptom

³ Even though the definition of SSD has eliminated some obstacles previously mentioned [23], it has been criticized by introducing a lack of specificity to the study population, which includes patients with both medically explained and unexplained somatic symptoms [24,25].

development, and identify dysregulated anxiety and defenses (see sections 2.3.2.2 and 2.3.2.3) [30,31].

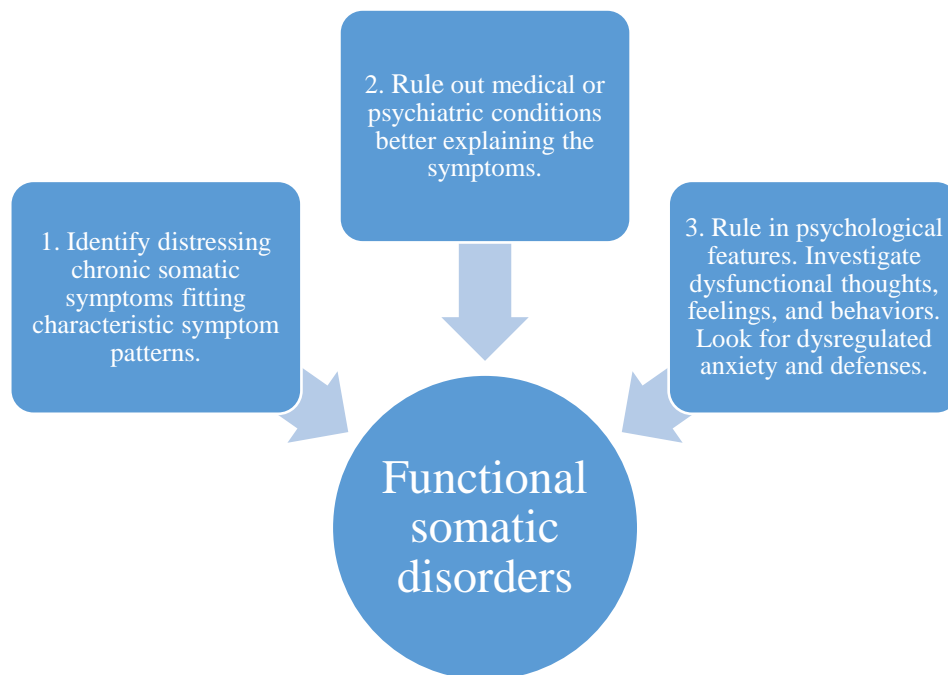


Figure 1. *The assessment of patients with distressing somatic symptoms according to EAET.*

2.2 FUNCTIONAL SOMATIC DISORDERS: PREVALENCE, COMORBIDITY, QUALITY OF LIFE, AND CONSEQUENCES

The lack of consistent nomenclature for patients with chronic somatic symptoms hampers development of the research field in several ways. One challenge is comparing studies and drawing conclusions. As FSD can be extended to both patients with functional somatic syndromes and patients with SSD, I will discuss these conditions in greater detail. Still, I will occasionally use references that apply to other classifications.

Functional somatic syndromes are common. A large review examined the prevalence of IBS worldwide and found that it varied depending on the definition used [32]. For one of the most common definitions, the prevalence was 9.2%. Conditions involving other forms of chronic pain, such as fibromyalgia, are also common. A meta-analysis of 65 scientific studies, including over 3.5 million participants, found that about 2% had fibromyalgia, rising to 4% if only women were studied [33]. The prevalence of SSD is also believed to be high, estimated at 5–7% in the general population [1]. However, the shortage of studies exploring the prevalence of SSD based on criterion-standard interviews means there are no reliable estimates [34].

In diagnosing FSD, it is important to specify if psychological features cause distress and have a negative impact on somatic symptoms. Since this can be done by diagnosing the presence of

SSD, it would be useful to know how many patients with FSD also have SSD. The few empirical studies performed suggest that 26–35% of patients with fibromyalgia also fulfill criteria for SSD [35,36], and that patients with FSD-SSD fare worse in terms of having higher psychiatric comorbidity and higher impact on core symptoms of pain and fatigue [36].

Functional somatic syndromes are not only common; patients self-report more physical symptoms [37] and worse health and quality of life than for comparable medical conditions [38]. For example, the quality of life among patients with fibromyalgia is worse than that among people with rheumatoid arthritis.

Patients with functional somatic syndromes generally find it difficult to navigate the healthcare system. They use fourteen times more physician visits than the general population and use nine times more healthcare resources [37]. Average annual healthcare costs are almost three times higher in patients with functional somatic syndromes than among those with medical conditions [39]. Moreover, the relative risk of ending up on sick leave or disability pension is higher than among medical controls [40].

Additional long-term, negative consequences may arise in functional somatic syndromes and somatic symptom disorder [41]. Functional capacity is often reduced, which can result in unemployment or early retirement [40] and also increases the risk of suicidal thoughts [42] and premature death [43]. Medical treatment, such as surgery or pharmacological therapy, has limited effects at best [41] and iatrogenic effects at worst [44], with one example being that patients become addicted to opioids [45]. Despite this, patients with functional somatic syndromes undergo more surgical interventions than patients with verified somatic diseases [37].

Patients with functional somatic syndromes often have somatic and psychiatric comorbidities in addition to reduced quality of life [46]. One review found that about 50% of patients with fibromyalgia also was diagnosed with IBS, but individual studies show up to 95% overlap [10]. Psychiatric comorbidity with anxiety and depression is also common, with one review article showing that depression occurs in up to 63% of patients with fibromyalgia [47]. Other studies have shown that anxiety and depression are more common in functional somatic syndromes than in comparable medical conditions [48].

Thus, patients with functional somatic syndromes suffer greatly and their symptoms have a major impact on their lives. Although they use healthcare more often than patients with comparable medical conditions they are less satisfied with it [49]. The most common reason for disappointment with a healthcare visit is that the doctor does not give a clear description of

the diagnosis or the future course of care [50]. The road to finding an understanding healthcare provider is often described as long [38]. For many people with functional somatic syndromes, symptoms are unpredictable and difficult to manage [51]. Frustration is heightened when they also experience a doctor's lack of understanding and empathy and inability to relieve symptoms [52]. Some dissatisfied patients with functional somatic syndromes "shop" for doctors [53,54]. Although changing doctors may be a short-term solution, this behavior contributes to frustration in the long term. When meeting a new doctor, all one's suffering must be explained again, and a doctor who sees that a patient has changed primary care doctors several times may be less inclined to help. In addition, after being shuffled around within healthcare services, patients may find it difficult to trust doctors [55].

In summary, functional somatic syndromes are common and create a significant burden for the individual and society. What can be done to alleviate suffering for these patients? Next, I will discuss psychological treatment models of FSD.

2.3 PSYCHOLOGICAL TREATMENT MODELS OF FSD

It is out of the scope of this literature review to systematically describe all the proposed psychological treatment models of FSD. As most research have been conducted using cognitive behavioral treatment models, these will be described briefly. Psychodynamic therapy is also introduced, as this has informed the development of EAET.

2.3.1 Cognitive behavioral therapy

Treating patients with FSD is challenging. Most research has been conducted on Cognitive Behavioural Therapy (CBT). Traditional CBT targets dysfunctional thoughts and behaviours with different, not always overlapping, protocols. CBT will usually serve to reduce symptoms and improve functioning by cognitive reappraisal techniques, behavioural activation, problem solving, and encouraging sleep hygiene [56–58]. Part of the treatment programme is the use of relaxation techniques to reduce physiological arousal. CBT has been shown to be beneficial, but the effect sizes for somatic symptom reduction tend to be small. In one meta-analysis, a small effect size ($d = 0.22$) was detected, favouring CBT over treatment-as-usual in chronic pain populations [59]. In another meta-analysis of CBT versus wait list, a small effect size ($d = 0.37$) was demonstrated for patients with medically unexplained symptoms [60]. In addition, in one quite recent meta-analysis, only 13% of patients with fibromyalgia had a substantial (at least 50%) somatic symptom reduction [61].

As traditional CBT tends to have small effects, several developments have been proposed and studied. One development of CBT, Acceptance and Commitment Therapy (ACT), concentrates

on increasing psychological flexibility and functional capacity and does not target somatic symptoms per se. However, negligible to non-significant effects compared with CBT were demonstrated in a meta-analysis [62], although further refinement of ACT protocols show promising results [63].

A second line of CBT has focused more on exposure (minimizing avoidance), with patients encouraged to confront pain and other somatic symptoms. For example, exercise for patients with fibromyalgia might create discomfort and pain in the short run, but is beneficial in the long run [64]. This approach been tested with promising results [65,66] but has not been directly compared with traditional CBT.

A third line of CBT, more relevant to the treatment model of EAET, has focused on emotional regulation deficits as a maintaining factor in FSD. In two randomized controlled trials (RCTs) comparing traditional CBT to CBT with a focus on learning emotional regulation skills, the latter had a better effect on both somatic symptoms and psychiatric symptoms [67,68], especially among patients fulfilling criteria for a comorbid psychiatric disorder [67].

In summary, traditional CBT models leave room for improvement in treating FSD. Several CBT protocols with a focus on either increasing psychological flexibility or exposure or targeting emotional regulation deficits are under development. Based on these studies, it seems beneficial to increase the focus on exposure and perhaps especially on emotional exposure and regulation. As the text now turns to psychodynamic treatment models of FSD, we will see that emotional exposure and regulation are also at the foreground.

2.3.2 Psychodynamic treatment models

Understanding and treating patients with unexplained distressing somatic symptoms has captured the interest of psychodynamic theorists for a long time [69]. However, it is only more recently that short-term psychodynamic psychotherapies have been developed and systematically evaluated. In two new meta-analyses, short-term psychodynamic psychotherapies demonstrated a large and lasting effect on diminishing somatic symptoms in FSD, compared with passive controls [70], and a large effect over time within the treatment condition [71]. Moreover, in a recent meta-analysis, short-term psychodynamic psychotherapies outperformed CBT on pain and depression, at both post-treatment and follow-up [72].

One treatment strongly informed by short-term psychodynamic psychotherapy is EAET [26,71]. This model have been studied in RCTs, in patients with fibromyalgia [73], IBS [74],

urogenital pain [75], medically unexplained symptoms [76], and musculoskeletal pain [57]. In two of these trials, EAET was compared to either CBT or CBT and educational control, where EAET had a significant better effect than CBT on widespread pain and pain intensity and more patients achieving a 50% pain reduction [57,73].

There is no unifying psychodynamic theory for patients with medically unexplained somatic symptoms with psychological features, though there have been multiple attempts to describe the development and perpetuation of FSD. Although no unifying theory exists, theorists and developers of short-term psychodynamic treatment models stress the significance of trauma [77] and emotional regulation difficulties or deficits [78], with a focus on internal conflicts and emotional avoidance [29,79]. In Figure 2, a crude synthesized model is presented. This emphasizes (developmental) trauma, which is believed to be associated with emotional awareness and regulation difficulties, which in turn are associated with somatic symptoms [80].

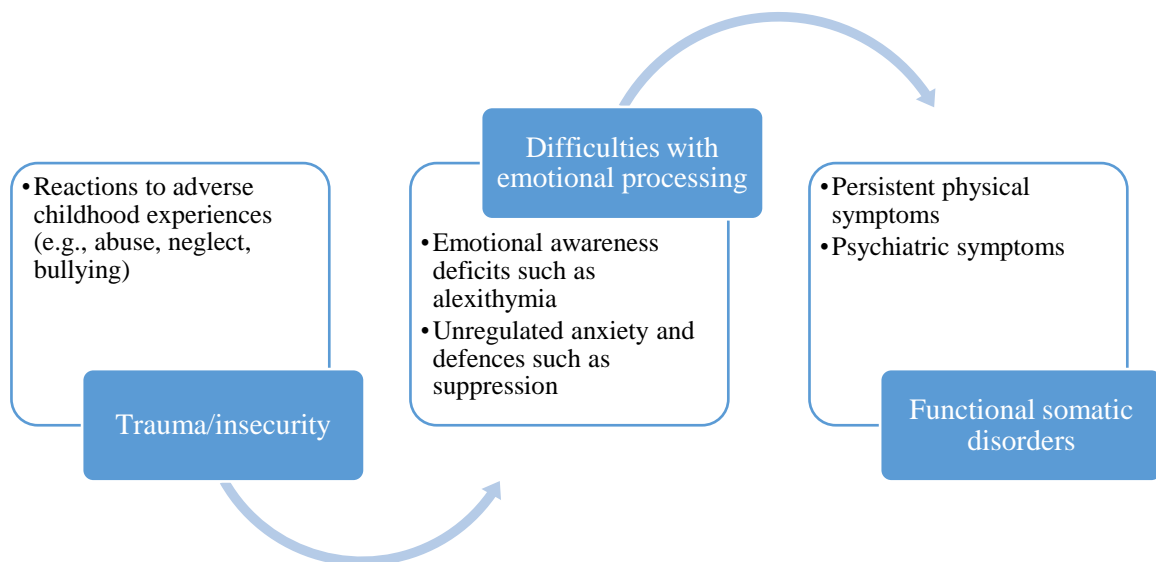


Figure 2. A proposed synthesized model of the relationship between trauma, difficulties with emotional processing, and functional somatic disorders.

2.3.2.1 Trauma in FSD

Developmental trauma is central to psychodynamic theories for FSD [29,69,81]. Several studies, both cross-sectional and longitudinal, have demonstrated that many forms of developmental trauma are risk factors for developing FSD [82–88]. For example, having experienced traumatic events such as sexual or physical abuse has been shown to be three times

more likely in patients with FSD than in healthy controls [85].⁴ This increased prevalence still holds when comparing FSD, such as fibromyalgia or IBS, to diseases like rheumatoid arthritis [82] and irritable bowel disease [86]. Although developmental trauma may include traumatic events that are associated with post-traumatic stress disorder, it also includes a range of adverse childhood experiences such as neglect, loss, or stressful life events such as bullying [77,89]. As shown in Figure 2, (developmental) trauma is believed to disrupt the capacity for emotional awareness or create emotional regulation difficulties [90]. Below, two different (but not necessarily contradictory) theoretical lines within the psychodynamic tradition will be described, focusing on their contributions to the understanding of FSD.

2.3.2.2 Anxiety and defenses as driving forces for somatic symptoms

One theoretical line within the psychodynamic tradition conceptualizes somatic symptoms as a consequence of what can be called the internal psychological defense system [81]. Aversive or upsetting feelings and emotional conflicts can give rise to anxiety and/or defense mechanisms. Having upsetting feelings (e.g., anger/rage) towards for example a loved one who has let you down will give rise to anxiety.

In modern psychodynamic theory, anxiety is conceptualized as a three-part system affecting the autonomous nervous system's various branches [29,91,92]. When anxiety is low, it will present as tension in striated muscles, potentially leading to tension headaches, chest pain, or even the full range of fibromyalgia symptoms. When anxiety is moderate, it will present as involuntary smooth muscle contractions, potentially resulting in symptoms of migraine or IBS. When anxiety is high, it will result in cognitive perceptual disruptions, such as visual blurring or difficulties thinking and concentrating. According to this line of psychodynamic theorizing, somatic symptoms can be a result of anxiety caused by distressing feelings and therefore are not necessarily attributable to a physical disease [30,31].

Distressing emotions, based on memories of earlier conflictual relationships, will usually not only lead to increased anxiety, but will also give rise to defenses [91]. The main function of such defenses is to counter anxiety and prevent forbidden thoughts and feelings from reaching one's consciousness [29,93]. This line of reasoning lies behind the assumptions of for example conversion disorder and goes back to the early work of Sigmund Freud, who described how trauma can cause strong, mixed feelings which become repressed (defense) and present as

⁴ These data reflect patients' self-reports, not register data.

somatic symptoms [69].⁵ The notion of repression has been operationalized by Weinberger and colleagues [95] and has been studied quite extensively [96]. Having a so-called repressive coping style (describing few symptoms of distress and anxiety, while exhibiting high levels of physiological activity) is more common in patients with fibromyalgia than in healthy controls [97]. It is also connected to an increased mortality rate among patients with heart disease and cancer [96]. Other defenses, such as suppression, where any distressing impulse, thought, or feeling reaches the consciousness but is pushed out of awareness, have also been linked to increased distressing somatic symptoms such as increased pain [98,99] or risk of developing somatic disease [100].

In summary, psychological conflicts can give rise to either anxiety that may induce or strengthen somatic symptoms via several pathways, or psychological defenses such as repression and suppression, which are predictive of numerous poor health outcomes.

2.3.2.3 *Alexithymia or emotional awareness deficits*

Another theoretical line within the psychodynamic tradition promotes the idea that somatic symptoms occur because of a lacking ability to understand feelings as emotions. Instead, feelings are experienced only as somatic symptoms. Trauma, such as repeated neglect from a parent, is believed to obstruct the capacity to symbolize emotions and connect bodily sensations to feelings [77,93]. This could be exemplified by a child who complains of stomach ache, but does not have a conscious awareness that this represents nervousness. Deficits in emotional awareness were thoroughly described by Sifneos, who coined the term “alexithymia” when meeting patients with proposed FSD [101–103]. Alexithymia is described as difficulties identifying one’s own feelings and describing and sharing feelings with others, while at the same time have an externally oriented thinking style, rather than an introspective one [104,105]. In contrast to the defenses described above, which ward off intense and distressing feelings, alexithymia is believed to be a deficit [106]. This deficit is often related to difficulties differentiating for example feelings from bodily sensations (“Am I nervous or do I just have a stomach ache?”) or not having differentiated affective experiences (“I don’t feel well” in contrast to “I feel angry and want to yell”). The concept of alexithymia has been extensively studied in the FSD population [99] and has been linked to increased pain and disability when

⁵ Why defenses (such as repression) can lead to specific somatic symptoms is not clear. Freud believed that somatic symptoms could sometimes be converted or symbolically connected to the repressed feelings or inner conflicts, for instance by becoming “blind” rather than accepting voyeuristic fantasies [94].

compared to both healthy and clinical controls [107,108]. Alexithymia has also been associated with an enhanced risk of developing opioid dependency, if opioids are prescribed for chronic pain [109].

In summary, and as shown in Figure 2, (developmental) trauma is believed to either disrupt the capacity of emotional awareness or instill emotional regulation difficulties that may cause somatic symptoms [90]. Albeit described as two distinct processes, emotional awareness deficits and maladaptive defenses are not mutually exclusive or contradictory and can interact to create further areas of suffering [110].

2.3.2.4 *Using emotions to overcome trauma – the emotional processing model*

EAET hypothesizes that one benefits from being able to emotionally process, i.e., use abilities to identify, discriminate, experience, adequately express, and tolerate one's emotions, to overcome trauma and stressful life events and that this process is related to health and decreased disability [111,112]. Maladaptive processes, described above, such as being overly reliant on rigid defenses (in essence avoiding disturbing emotions) or having deficits in the capacity to understand one's own emotions, will give rise to unregulated emotions and anxiety [81,91].

Baker and colleagues outlined the so-called *emotional processing model* (EPM) [113–115]. The EPM specifies three important mechanisms that obstruct the ability to process upsetting events which will give rise to somatic and psychiatric symptoms. The first mechanism that can obstruct emotional processing is situational avoidance. This prevents distressing stimuli from reaching consciousness. The second process that Baker described is emotional avoidance. Baker emphasizes suppression, where an emotional reaction is felt and reaches the consciousness but is suppressed because it is deemed to be upsetting. The third process that Baker described was impoverished emotional experience, which he and colleagues compared to the concept of alexithymia, described above [113,115].

According to EPM, not being able to confront one's emotions (i.e., situationally avoiding or suppressing them) or not being able to understand one's emotions (i.e., having an impoverished emotional experience) will also give rise to what Baker calls "uncontrolled emotions" (e.g., emotionally overreacting to a situation or having the urge to smash something). It might also lead to "signs of unprocessed emotions," where repeated, overwhelming, and unwanted feelings keep intruding. These processes (i.e., uncontrolled or unprocessed emotions) will also

increase the risk of experiencing somatic symptoms.⁶ Baker and colleagues have not only described a model (the EPM), but have also developed a well-validated questionnaire, the emotional processing scale (EPS-25), to capture the core processes in the EPM [114].

The EPS-25 holds some promise as a tool for studying relevant mechanisms in psychodynamically informed treatments like EAET. Examples include the measurement of defenses such as suppression and of a lacking capacity to understand one's feelings (e.g., alexithymia). Further, the notion of "unregulated emotions" or "signs of unprocessed emotions" in EPM may be of relevance. According to psychodynamic theory, no matter how "effective" a defense is, underlying emotions will exert pressure to become manifest [117], particularly in life situations that trigger underlying conflicts. The activation of an underlying emotional conflict might therefore show itself in the form of latent symptoms – or signs of unprocessed emotions – such as nightmares or increased somatic symptoms.

2.3.2.5 The etiology of FSD is multifaceted according to EAET

As described above, and illustrated in Figure 2, most models of psychodynamic theory rely heavily on the explanation of somatic symptoms as being rooted in psychological factors. There are exceptions, with psychodynamic models incorporating how biological vulnerabilities interact with psychodynamic factors [118]. Another exception is the treatment model of EAET.

EAET believes that the etiology of FSD is best described as multifaceted or multileveled [29]. In contrast to for example conversion disorder, where the somatic symptoms are thought to be caused by psychological factors, FSD is assumed to be caused by the intricate interaction of several biological factors (e.g., central sensitization [119], dysregulation of the autonomous nervous system [120]) and psychological factors (e.g., negative affect [121], emotional dysregulation [122]). Moreover, contrasting psychological and biological factors is superficial, implying a mind-body dualism, as functional seizures and paralysis also are being reflected in central nervous system aberrations [123]. It is out of scope of this literature review to discuss specific biological factors, although this should not be taken to mean that they are deemed unimportant in the development, perpetuation, or treatment of FSD [120].

⁶ Despite EPM having the explicit aim to explain both the development of functional somatic syndromes and their perpetuating factors [116], it is not clear exactly how somatic symptom is generated from deficits in emotional processing.

2.4 INTERNET BASED PSYCHOLOGICAL TREATMENTS

Digital methods of delivering psychological treatment have been on the rise for quite some time [124]. One type of digital psychological treatment is *internet-delivered guided self-help*, where patients are provided with psychoeducative material (usually reading material encompassing 10–15 pages each week) with related homework assignments and support from a therapist online [125].

There has been extensive research into internet-delivered guided self-help CBT (so-called ICBT) with over 300 RCTs [124] in a wide range of different populations [126–131], including patients with FSD [65,66,132]. ICBT for a variety of psychiatric and somatic conditions has been shown to be at least as effective as face-to-face CBT [133,134]. Treatment mechanisms of ICBT in FSD have been explored using mediation analysis [135,136] and dismantling designs [137]. In contrast, internet-delivered psychodynamic therapy (IPDT) is still in its infancy. In a recent meta-analysis, only seven RCTs of IPDT with a total of 527 participants having anxiety and depressive disorders could be identified [138]. The meta-analysis demonstrated small to medium effect sizes as compared with passive controls. More recent studies have indicated large effects of IPDT for adolescent depression, proving it as non-inferior to ICBT [139,140]. However, to my knowledge, no IPDT study has yet targeted patients with FSD.

Internet-delivered guided self-help can have benefits for patients, healthcare practitioners, and society [124]. For patients, one advantage is that the cost and time to travel to a therapist's office are decreased. For therapists, one advantage is that of increased flexibility, having the opportunity to work outside office hours. For society, one advantage may be equal and evidence-based care in rural areas with a lack of therapy providers.

2.5 SUMMARY OF THE RESEARCH FIELD AND ITS KNOWLEDGE GAPS

FSD is common and patients usually present with a high rate of comorbid difficulties. Not only is functional capacity often reduced, but quality of life also tends to be worse than in other comparable diseases. Most psychological treatment research has been conducted on CBT, where effect sizes tend to be modest and leave room for further development of more effective treatment protocols. High-quality research on short-term psychodynamic therapy for FSD, such as EAET, is growing more common, but has not been performed in a digital context, using internet-provided self-guided treatment. As EAET has been developed for multiple treatment formats, (i.e., individual [75,76], group [57,73], telehealth [141]) and research on IPDT has shown promising results, I-EAET for FSD might contribute to the field. However, given that

few psychodynamically informed internet-based treatments exist, there is a need for describing core principles and their application in IPDT. The development and perpetuation of FSD is believed to be multifaceted and multilayered within EAET, though difficulties in emotional processing are placed front and center. However, emotional processing has not been empirically investigated as a mediator in EAET for FSD. In summary, developing an internet-based treatment (I-EAET) for patients with FSD, describing its treatment principles, evaluating its feasibility and effectiveness, and studying emotional processing as a supposed treatment mechanisms might be a step forward in the research of patients with distressing somatic symptoms, where existing treatment models leave room for further improvement in efficacy and effectiveness.

3 RESEARCH AIMS

3.1 GENERAL AIMS

The major aim of the thesis was to develop and evaluate I-EAET for participants with FSD, also diagnosed with SSD. A further aim was to explore whether emotional processing was a mediator of somatic symptom reduction in I-EAET.

Studies I–II of this dissertation made up a pilot studies to gain procedural experiences and specific hypotheses and apply these in Study III (RCT). Study IV used experiences from conducting treatments in Studies I and III to describe treatment principles in I-EAET.

Below, specific aims of each study are presented:

3.2 AIM – STUDY I

The aim of Study I was to develop I-EAET and ascertain its feasibility, credibility, and efficacy in patients with medically unexplained SSD.

3.3 AIM – STUDY II

Using data from Study I, the aim of Study II was to explore emotional processing as a possible mediator in I-EAET.

3.4 AIM – STUDY III

The aim of Study III was to put forward more specific hypotheses and do more rigorous testing of the results of Studies I and II in an RCT design. One specific aim was to investigate the efficacy of I-EAET versus a wait list control and investigate emotional processing as a mediator of treatment, using a competing mediator – that of depressive symptoms.

3.5 AIM – STUDY IV

The aim of Study IV was to describe important treatment principles in I-EAET including the use of a therapeutic alliance to possibly foster and deepen emotional processing in treatment.

4 MATERIALS AND METHODS

4.1 DESIGNS, ASSESSMENT, AND ANALYSES

Data on design, main analysis, and results are summarized in Table 3. Below is a more detailed description for every study included in this dissertation.

4.1.1 Study I

Study I was an uncontrolled feasibility study of 52 participants receiving I-EAET. The primary outcome was severity of somatic symptoms (see section 4.2 for further descriptions of measures). Measures of anxiety, depression, trauma-related symptoms, and functional impairment were used as secondary outcomes.

Moreover, in order to evaluate feasibility, credibility, and possible negative effects of treatment, we postulated several criteria: adherence was deemed adequate if the proportion of completed modules in the treatment was $> 70\%$, most participants reported a high level of treatment credibility and satisfaction with treatment ($> 70\%$ and $> 80\%$, respectively), the attrition rate was lower than 35%, and negative effects were reported by fewer than 10% of participants. After treatment completion, participants could give written comments on the strengths and weaknesses of the treatment.

Assessments were made online at pre-treatment, weekly during treatment, post-treatment, and at a 4-month follow-up (except measures of credibility, which were collected at treatment week 3). Within-group effects were tested with dependent *t*-tests to estimate whether changes from pre- to post-treatment and from pre-treatment to the 4-month follow-up were statistically significant. Within-group effect sizes were calculated using Cohen's *d* (i.e., the standardized mean difference between two timepoints), where meaningful differences have been suggested to be $d = 0.2$ (small), $d = 0.5$ (moderate) and $d = 0.8$ (large) [142].

4.1.2 Study II

Study II was a stepwise mediation analysis using linear mixed models with random intercept with weekly collected data from Study I. Proposed mediators affecting the outcome (somatic symptoms; PHQ-15) were the five facets of the emotional processing scale (EPS-25), i.e., avoidance, suppression, impoverished emotional experience, unregulated emotions, and signs of unprocessed emotions. (See section 4.2 for further descriptions of measures.)

4.1.3 Study III

Study III was an RCT, where 74 participants were randomized at a 1:1 ratio to either I-EAET or a wait list control. Participants on the wait list were offered treatment after the 4-month treatment assessments were completed.

Two primary outcomes were used: severity of somatic symptoms and pain intensity. Secondary outcomes measured anxiety, depression, insomnia, sleepiness, functional impairment, and trauma-related symptoms. Assessed mediators were the five facets of emotional processing and depressive symptoms. Assessments were made online at pre- and post-treatment, and at the 4-month follow-up (and, for the treatment group, at 12 months, though these data are not reported, as they have not been analyzed). Negative effects of treatment were measured at the 4-month follow-up.

Using an intention-to-treat principle, the effects of condition (I-EAET vs. wait list control), time (baseline, post-treatment, and follow up), and condition \times time were analyzed using linear mixed models with maximum likelihood estimation, with Bonferroni-Holm correction for the primary endpoints (post-treatment and 4-month follow-up). Between-condition effect sizes were calculated using Cohen's *d*, calculated as the difference in slopes between conditions divided by the pooled baseline standard deviation. Chi-squared tests were conducted to test differences in the prevalence of "substantial" responders (at least 50% reduction from baseline). The mediation analyses were based on a mixed-effects regression model [143] and investigated the impact of six potential mediators – the five subscales of the EPS-25 and depressive symptoms – on the two primary outcomes (somatic symptoms and pain intensity) using measurements at pre- and post-treatment.

4.1.4 Study IV

Study IV was a theoretical review with descriptions of text-based interactions between the internet therapists and participants from Study I and III.

4.2 MEASURES OF CENTRAL IMPORTANCE

Studies I–III used both primary, secondary, and mediational measures. Here, only the instruments deemed to be of central importance will be described.

Study I and Study III used the Patient Health Questionnaire 15 (PHQ-15) [144] as a primary outcome measure.⁷ The PHQ-15 consists of 15 somatic symptoms (e.g., back pain, headaches, feeling tired, or having low energy) that patients rate as “not bothered at all” (0), “bothered a little” (1), or “bothered a lot” (2). Scores range from 0 to 30 and are summed up for a total score. Different cut offs are used, where scores of 5 represent mild levels of somatic symptoms, 10 moderate and 15 severe.

There were three main reasons why PHQ-15 was chosen as the primary outcome measure. First, EAET targets patients with a variety of somatic symptoms which the PHQ-15 can detect. Second, EAET focuses on somatic symptom reduction, not on symptom preoccupation as many other treatments do. Third, the PHQ-15 is a well-validated questionnaire [145]. It can quite reliably detect SSD in the general population [146] and captures disease severity in patients with functional somatic syndromes [147]. It has shown fair to good psychometric properties in a Swedish population [148] and has been used as an indicator of treatment effect in several studies [149,150].

Studies II and III used the EPS-25 [114] as a mediational measure. The EPS-25 measures five facets of emotional processing: impoverished emotional experience, signs of unprocessed emotion, avoidance, suppression, and unregulated emotion). Items are rated from 0 (completely disagree) to 9 (completely agree) and averaged for each subscale. Higher scores imply more severe difficulties in different aspects of emotional processing.

The EPS-25 was chosen as a mediational measure for two main reasons. First, it aims to measure constructs related to supposed treatment mechanisms in EAET, such as emotional awareness deficits (e.g., impoverished emotional experience) and defenses (e.g., suppression). Second, the EPS-25 scale has been validated in several studies, is widely used, and has been translated into 13 languages [151]. Further, it has been found to be sensitive to changes following treatment [152,153].

4.3 PARTICIPANTS IN STUDIES I–IV

Inclusion criteria: All participants in Studies I–IV were > 18 years old and self-referred (advertisements were posted on social media) with an interest in if emotional factors contributed to their somatic symptoms. They were confirmed as having medically unexplained symptoms and a probable diagnosis of SSD from a physician. This was then corroborated using

⁷ Note that Study III had the Brief Pain Inventory as a primary outcome as well.

a structured interview (Health Preoccupation Diagnostic Interview [154]) and assessment at a multidisciplinary conference. Study I used a cut-off of 10 points on the PHQ-15 (indicating moderately distressing somatic symptoms) as an inclusion criterion, while Study III used a cut-off of 5 points (indicating modestly distressing somatic symptoms). All participants underwent a structured psychiatric interview (the Mini International Neuropsychiatric Interview) [155].

Exclusion criteria were: a) a psychiatric disorder that need other treatment (e.g., current alcohol or substance abuse, depression with suicidal ideation); b) somatic disease with recognized tissue pathology (e.g., cancer, multiple sclerosis, or rheumatoid arthritis); c) ongoing and interfering medical or psychological treatment. Note that exclusion criterion (b) is a deviation from the DSM-5 diagnosis of SSD, which can include patients with a range of medical conditions.

All studies included participants from Sweden, of which almost all were women (Study III: 82% vs. Study I: 96%). The mean age in Study I and III ranged between 43 to 50 years and many had college or university education (Study I: 44% vs. Study III: 53%). The majority of patients had psychiatric comorbidity; in Study I, 80% had a comorbid psychiatric diagnosis, and in Study III, 70% had comorbid depression. The most common self-reported functional somatic syndrome was fibromyalgia in Study I, affecting 42% of patients, while in Study III it was IBS or severe headache/migraine, with 27% being affected by either illness.

4.4 DEVELOPMENT OF I-EAET

EAET has been developed for an individual one-session (90 minutes per session) or group-based eight-session (90 minutes per session) formats. Therefore, a completely new manual with psychoeducative material and homework assignments was created to fit the self-guided internet-based format.⁸ The Swedish manual of I-EAET has been published [157].

The main objective of I-EAET is to help participants overcome difficulties in emotionally processing upsetting feelings (connected to developmental trauma or stressful life events) and thereby reducing unregulated anxiety and defenses which can contribute to somatic symptoms. This objective is accomplished using three main treatment components: 1) psychoeducation to create insight and awareness, 2) defense recognition and relinquishing with anxiety regulation, and 3) emotional processing and exposure (see Table 2 for a full description of the treatment).

⁸ Inspiration came from Howard Schubiner's self-help book "Unlearn your pain" [156].

For each main treatment component, I-EAET uses psychoeducative material (10–15 pages per module/session) with homework assignments. An internet therapist is available to give response on assignments and answers questions when needed. The therapist relies on both supportive interventions (such as encouragement) and expressive interventions (such as asking the patient to explore links of emotions-anxiety-defenses).

The first treatment component – psychoeducation to create insight and awareness – consists of two modules/sessions giving a neuroscientific explanation of how somatic symptoms can be generated and maintained without any structural damage being present. In the main homework assignment, participants are encouraged to consider a possible link between somatic symptoms and stressful life events, using work sheets.

The second treatment component – defense recognition and relinquishing with anxiety regulation – also consists of two modules/sessions where participants learn to identify defenses, most importantly the defense of turning anger inwards (having self-critical thoughts). Participants are encouraged to build a self-soothing capacity by using self-compassion meditation exercises throughout the treatment.

The third treatment component is emotional processing and exposure and consists of four modules/sessions. The first two modules use expressive writing to emotionally process developmental traumas or stressful life events (detected in modules 1–2). The specific form of expressive writing is modified from principles of intensive short-term psychodynamic therapy [158]. The next two modules focus on expressing feelings in important relationships and balancing assertion with intimacy. The main homework assignments in these four modules are written exercises, but also include sending letters or contacting significant others to deal with any relationship issues.

Table 2. *Structure and content of I-EAET.*

EAET	<i>Main theme</i>	<i>Main treatment component</i>	<i>Main homework</i>
Modules 1–2	Psychoeducation on the mind-body connection	Psychoeducation, insight, and awareness	Look for a possible connections between somatic symptoms and stressful life events
Modules 3–4	Turning anger inwards/self-critical thoughts	Defense recognition and anxiety regulation	Identify defenses and develop a self-soothing capacity. Learn to do self-compassion meditation exercises
Modules 5–7	Expressive writing as emotional processing	Emotional processing and exposure	Do expressive writing exercises and process anger, guilt about anger, sadness, and love
Modules 8–9	Learn to be emotionally expressive and assertive	Emotional processing and exposure	Express feelings in important relationships and balance assertion with intimacy
Module 10	Summary and lessons learned	Insight and awareness	Summarize insights and plan for the future

4.5 ETHICAL CONCERNS

When conducting research, ethical and legal requirements need to be adhered to. A central document is the Declaration of Helsinki, the basic principles of which protect the rights of research participants by respecting the autonomy and integrity of the individual and the right to make informed decisions [159]. Although there might be many reasons to do research, ensuring that the research participants are not harmed must always take precedence over the interests of science. In conducting the studies presented in this thesis, several ethical concerns were not only identified but also encountered firsthand.

4.5.1 Ethical concerns regarding inclusion/exclusion

One ethical concern relates to the question of who can take part in the studies being offered. Given that data and treatment were collected and conducted using the internet, it might be that certain groups were not given access to the research [160]. Studies show that people of low income and the elderly use the internet less than other groups [161]. This is problematic, as

studies have shown that FSD is also associated with lower socioeconomic status [162] and older age [163].

It was hypothesized that participants would experience exclusion from the I-EAET negatively if they had applied to be part of the research. Exclusion criteria were therefore carefully described on the project information page and information on why an exclusion occurred was made part of information provided to the research participants. Moreover, referrals to other appropriate treatment were made if a participant was excluded because of suspected substance abuse or some other medical/psychiatric problems. However, some patient groups experienced possible *inclusion* in the treatment studies as negative. When recruiting for Study I, one patient association criticized the proposed research for not excluding patients with chronic fatigue syndrome as other diseases were ruled out (for example patients with rheumatoid arthritis) [164]. In an effort to take this criticism into consideration, we replied and described that we were using certificates from physicians stating that a thorough medical examination had been carried out and that a physician deemed it probable that the individual patient had a diagnosis of SSD (which we then corroborated with diagnostic interviews) and was deemed suitable for taking part in the research. We then confirmed this at a treatment conference with the research team, involving a specialist psychologist as well as senior physicians.

4.5.2 Ethical concerns regarding risk of harm or deterioration

A central ethical principle in research is to do no harm to research participants. However, participating in a psychological treatment can be exhausting and even temporarily anxiety-provoking [165]. As EAET presents specific ways to cope with anxiety, such temporary anxiety is believed to be acceptable. Moreover, approaching research subjects with questions about stressful life events, as in done in EAET, is always a delicate process [166]. As EAET not only asks about this, but also offer a treatment to possibly remedy emotional reactions to stressful life events, this risk was deemed to be acceptable.

Further, previous research has shown that some patients experience negative effects of internet-based treatment or simply deteriorate despite treatment [167]. In line with this, some researchers claim that CBT can be harmful for patients with FSD, especially given that it encourages increased physical activity [20]. I believe that there are some ways to address this concern when it comes to the treatment studies conducted in this dissertation. First, EAET has a different treatment focus than CBT, not encouraging increased physical activity per se [168]. Second, as participants are followed more closely than is the norm in regular care, for example through weekly measurements, any deterioration can be more easily detected and managed.

Third, studies have shown that negative effects following treatment for FSD are not common, although they do occur [169]. Studying negative effects was also part of the investigation of I-EAET for FSD. Both Study I and Study III evaluated potential negative effects using the Negative Effect Questionnaire. According to this instrument, negative effects such as hopelessness, lack of quality of treatment, dependency, stigma, and failure were all at acceptable levels (usually less than 10% of participants experienced these effects). However, 65% of participants experienced increases in some symptoms, more specifically that “unpleasant memories resurfaced.” As EAET explicitly addresses processing of unpleasant memories, this was considered an effect of treatment engagement rather than a negative effect. All in all, the research project showed a adequate capacity to detect factors or events that might compromise the safety of research subjects and that the negative effects that did occur were either possible to handle or deemed acceptable.

4.5.3 Ethical concerns regarding respect for autonomy

Psychological treatment requires participants to share information of a very personal nature and some participants could potentially experience a breach of privacy. To handle this, a description of the processing of personal data was available on an online platform (mbsstudien.se) to prevent any concerns about data security. Moreover, it was declared that participation in research was voluntary and that participants could end their participation at any time. To further protect the privacy of the participants, the treatment was provided on an encrypted web platform, accessed via a two-factor authentication solution. Lastly, therapists only had access to information on the specific participants they had in active treatment. Moreover, all data were stored on secure servers placed at the Karolinska Institutet.

Lastly, ethical permits for Studies I–III were endorsed by the Regional Ethics Review Board in Stockholm, Sweden, and Studies I and III were also registered at ClinicalTrials.gov to ensure transparency. As Study IV was essentially a theoretical article, and 1) all written dialogue with the patients was de-identified and partly modified, 2) the point of the dialogue was to illustrate processes, rather than reporting data about a person, and 3) written consent to use de-identified dialogue was obtained from patients, part of the research group (Johansson, Ljótsson, Maroti) deemed this study to be within the scope of the original ethics application from Study I and III. This decision was documented in writing.

5 RESULTS

A short summary of the results is given in Table 3. Here, I will present the results of Studies I–IV in greater detail.

5.1 STUDY I

Fifty-two participants were included in an uncontrolled pilot study of I-EAET, where 36 participants (69%) reached a minimally clinically important reduction in somatic symptoms and 14 participants (27%) achieved an at least 50% reduction of somatic symptoms at the 4-month follow-up. A large within-group effect size was detected at both post-treatment ($d = 1.13$) and follow-up ($d = 1.19$). Attrition was minimal, with all participants completing the primary measure at baseline and all but one participant completing the primary measure at 4-month follow up. Using rigorously stipulated feasibility criteria, treatment completion, efficacy, credibility, and satisfaction were all deemed satisfactory. Adherence, defined as the percentage of all treatment modules being completed, was excellent (85% in total).

5.2 STUDY II

Study II was able to demonstrate an estimated average weekly change on the PHQ-15 of 0.29 points and a significant slope of 0.13 points on the EPS-25, indicating a reduction of somatic symptoms and emotional processing deficits over the treatment period. Moreover, using weekly measurements of emotional processing (EPS-25) and somatic symptoms (PHQ-15), a single mediator analysis with linear mixed models demonstrated significant associations with all subscales of EPS-25 and the PHQ-15, indicating that an increased capacity of emotional processing were associated with reductions in somatic symptoms. However, in the multiple mediator analysis, where the five potential mediators (subscales of the EPS) competed in explaining the change in somatic symptoms, only two subscales – “signs of unprocessed emotions” and “impoverished emotional experience” – showed a unique contribution to somatic symptom reduction. For signs of unprocessed emotions the ab product (or mediated effect) was 0.054 with a confidence interval of 0.03–0.11 and for impoverished emotional experience the ab product was 0.068 with a confidence interval of 0.03–0.13, in effect indicating that the two subscales accounted for 42% of the change in somatic symptom reduction.

5.3 STUDY III

In an RCT of 74 participants to further investigate the results from Studies I and II, I-EAET, decreased somatic symptoms at both post-treatment ($d = 0.44$) and 4-month follow-up ($d =$

0.46) compared with a wait list control, with near medium-sized between-effect sizes. Although I-EAET reduced pain ($d = 0.36$), anxiety ($d = 0.47$), depression ($d = 0.50$), and insomnia ($d = 0.40$) at post-treatment, these effects were not maintained at follow-up. Nevertheless, when an at least 50% somatic symptom reduction was used as a criterion, there were seven more responders in I-EAET at the 4-month follow-up (21% versus 3% in the control group). Data attrition for primary measures was deemed acceptable, with 70/74 patients returning post-data and 67/74 returning data at the 4-month follow up. Adherence was deemed excellent with 84% of I-EAET patients completing all treatment modules. Study III also demonstrated that even when using depression as a competitive mediator, a facet of emotional processing – “signs of unprocessed emotions” – partially mediated the treatment effect on somatic symptoms (ab product -0.37 with confidence interval of $0.05-0.99$).

5.4 STUDY IV

Studying text interactions between participants and their internet therapists showed that the therapeutic alliance sometimes seemed to facilitate emotional processing in I-EAET and possibly add to the effect of merely using supportive interventions when guiding a participant through the self-help material.

Table 3. Summary of material, methods, and results of Studies I–IV.

	Study I: pilot and feasibility study of I-EAET	Study II: preliminary investigation of emotional processing as a mediator in I-EAET	Study III: Two-arm RCT, I-EAET vs. wait list, with mediator investigation	Study IV: description of supposed important treatment principles in I-EAET
<i>Participants</i>	54 participants diagnosed with somatic symptom disorder believed to have centralized features	Study participants from Study I	74 participants with functional somatic disorder, diagnosed with somatic symptom disorder	Study participants from Studies I and III
<i>Design</i>	Uncontrolled trial (pre-post and follow-up measures)	Mediational analysis using weekly measurements	Randomized controlled trial, mediational analysis using pre-post measurements.	Description of treatment principles
<i>Main statistical analysis</i>	Dependent <i>t</i> -tests, Cohen's <i>d</i>	Stepwise mediation analysis using linear mixed models with random intercept	Linear mixed models with maximum likelihood estimation, stepwise mediational analysis, Cohen's <i>d</i>	N.A.
<i>Data attrition (primary measures or the mediational measure EPS-25)</i>	Post: 52/52 FU: 51/52	Depending on week: 45–52/52	Post: 70/74 FU: 67/74	N.A.
<i>Adherence</i>	85% modules completed	N.A.	84% completing all treatment modules	N.A.
<i>Primary effect measures</i> PHQ-15 (post/FU) BPI-4 (post/FU)	Within group effect size $d = 1.13/d = 1.19$ N.A.	N.A.	Between group effect size $d = 0.44/d = 0.46$ $d = 0.36/d = 0.19$	N.A.
<i>Unique mediators (EPS-25) of the effect on somatic symptom burden</i>	N.A.	Signs of unprocessed emotions: 0.07 Impoverished emotional experience: 0.05	Signs of unprocessed emotions: -0.37	N.A.

PHQ-15: Patient Health Questionnaire 15, BPI-4: Brief Pain Inventory-4, EPS-25: Emotional Processing Scale-25, FU: follow-up, N.A.: not applicable.

6 DISCUSSION

The studies in this dissertation demonstrate that a newly developed protocol of I-EAET is feasible, credible, and does not produce substantial negative effects in patients with functional somatic disorders (Studies I and III). In an RCT of I-EAET versus a wait list condition, I-EAET reduced somatic symptom at both post-treatment and a 4-month follow-up with near-medium effect sizes (Study III). Moreover, 21% of participants received an at least 50% somatic symptom reduction at the 4-month follow up as compared with 3% in the control group. However, initial reductions at post-treatment for pain intensity and measures of anxiety, depression, and insomnia were no longer significant at follow-up (Study III). Being able to process “signs of unprocessed emotions” was found to be mediator in I-EAET (Studies II and III), empirically strengthening the case for emotional processing being one of the perpetuating factors in FSD. Using the therapeutic alliance to facilitate emotional processing in I-EAET might add to the effect of using supportive interventions when guiding a participant through the internet-based self-help material (Study IV).

The studies summarized in this dissertation point to several difficulties that are deemed important to discuss. I will focus on 1) the need for continued treatment development as EAET has only shown promising results, 2) the difficulties studying emotional processing as a mechanism of change in EAET of FSD, and 3) the difficulties finding an adequate diagnosis for patients with distressing somatic symptoms when treatment is informed by the EAET model and its implications on generalizability of the findings.

6.1 A NEED FOR CONTINUED TREATMENT DEVELOPMENT

What are we referring to when we say that something is an “effective” treatment? It is important to remember that the aims of treatment for FSD can vary. While EAET focuses on somatic symptom reduction, proponents of Acceptance and Commitment Therapy argue that this should not be the primary aim of psychological treatment. Instead, one should address distress and functional impairments stemming from the physical symptoms [63].

The effects of I-EAET on somatic symptom reduction found in this thesis seem largely comparable to those of internet-based CBT [170] and emotion-focused short-term psychodynamic therapies on a diverse sample of functional somatic syndromes [71]. In addition, the absolute change in pain intensity for I-EAET in Study III (0.79 point) is similar to that reported in an RCT of in-person, group EAET (0.86 point; [73]), although smaller than that in another RCT of in-person, group EAET (1.47 points; [57]). Moreover, the proportion of responders is greater (21%) than that demonstrated in a meta-analysis of CBT for fibromyalgia,

where only 13% of patients had considerable pain reduction at post-treatment [61]. Lastly, 70% of participants in Study III reported ongoing or recurrent depression. In a meta-analysis of participants with medically unexplained symptoms, it was demonstrated that participants who had comorbid depression tended to end their therapy with somatic symptoms being more severe [171]. Given that Study III included 70% of patients with comorbid depression, it is clearly a strength that somatic symptoms were reduced. Moreover, in studies of internet-delivered treatments for depression attrition usually is common [172]. In spite of elevated depression in Study III, attrition was very low, indicating that I-EAET was able to engage depressed participants to stay in treatment.

Although the effects of I-EAET seem promising, the effects are smaller than those in RCTs of newly developed internet-based CBT protocols for FSD. For example, compared with wait list controls, internet-delivered ACT had a large effect on diminishing pain intensity in people with chronic pain ($d = 1.20$; [63]), and exposure-based I-CBT demonstrated a large reduction in pain intensity in fibromyalgia ($d = 0.86$; [66]). However, it should be noted that in contrast to Study III of I-EAET, where 70% of patients also fulfilled criteria for depression, the number of patients with depression was substantially lower in both CBT studies, ranging from 37% to 53%, potentially making the room for somatic symptom improvement smaller in I-EAET.⁹ Moreover, the wait list treatment in I-EAET showed a marked within-subject effect size increase from pre- to post-treatment ($d = 0.55$). This was perhaps due to weekly monitoring of emotional processing, giving participants the possibility to continuously reflect on their emotional capacity as part of the clinical protocol, possibly reducing the between-effect size of somatic symptom reduction. A substantial reduction of symptoms in the wait list condition is not common in RCTs. In the aforementioned ICBT studies, the wait list demonstrated either no improvement in somatic symptom intensity [63] or even a minor worsening over time in pain [66], thereby possibly contributing to the noticeable effectiveness of the treatments [173]. Further, two other reasons for the less efficacious nature of I-EAET compared with the newly developed protocols of ICBT could be speculated upon. Study III was initiated as the third wave of the coronavirus hit Sweden in February 2021, and it is known that the pandemic can cause an increase in psychiatric symptoms, especially worsening of pre-existing symptoms [174,175]. Lastly, participants in Study III had lower scores of somatic symptom distress (but also depression, anxiety and post-traumatic symptoms) compared with those in Study I, perhaps making the room for symptom improvement smaller (e.g., floor effect) [176].

⁹ We were not able to test depression as a moderator of treatment (Study III) due to lack of statistical power.

I-EAET is still in its infancy as a possible treatment for FSD. As described, I-EAET did show an effect, with small between-group effects on pain intensity and somatic symptom reduction at post-treatment, and a near-medium effect size for somatic symptom reduction at follow-up. It should be noted that the significant results of pain and somatic symptom reduction did not survive Bonferroni corrections, indicating low robustness of the results. Moreover, the results await replication. Further, it is not known whether I-EAET outperforms placebo or how it fares against more active treatments such as I-CBT or I-ACT. Its effect in routine care also remains to be elucidated. Lastly, although EAET and I-EAET seem promising, only a minority of patients had their primary somatic symptoms reduced by at least half at follow-up. Looking at three RCTs for EAET, the figures range between 21% (Study III), 23% [73], and 26% [57], respectively.¹⁰ Although these values are better than those for traditional CBT (13%) [61], the question of how to develop better treatment options for patients with FSD remains. Some authors have discussed the idea of developing idiosyncratic treatments to increase treatment outcome [177], which might be one way forward. Moreover, distinguishing which patients responds to I-EAET would be very time and cost saving. One way forward would be to perform a moderator analysis of I-EAET; as for example emotional awareness capacity has been shown to moderate the treatment effect of both CBT and psychodynamic therapy in patients with comorbid somatic and psychiatric disorders [178]. Another way is to conduct predictor studies of I-EAET, as has been done for EAET [179].

6.2 EMOTIONAL PROCESSING AS A MECHANISM OF CHANGE IN EAET FOR FSD

There are very different treatment models or theories regarding what are important psychological mechanisms of change in the treatment of FSD. Common examples include the fear-avoidance model that is used in CBT [180], relational frame theory and its clinical application in ACT's concept of psychological flexibility [181], and a cognitive approach called the extended reattribution and management model [182]. Core mechanisms of change in CBT are believed to be dysfunctional avoidance behaviors (including "internal experiential avoidance") and dysfunctional illness beliefs [183].

Despite differences in focus, none of the mentioned CBT models or theories have an explicit focus on targeting or processing unsettling emotions as a mechanism of change in patients with

¹⁰ These comparisons come from the percentage of participants having an at least 50% somatic symptom reduction, using the PHQ-15 in Study III, but the BPI-4 in Yarns et al. (2020) and Lumley et al. (2017).

FSD.¹¹ Studies II and III in this dissertation found that facets of emotional processing, “impoverished emotional experience” (Study II) and “signs of unprocessed emotions” (Studies II and III) from the EPS-25, mediated somatic symptom reduction (measured using the PHQ-15).¹² The partial mediating effect of signs of unprocessed emotions stayed significant even after using a competitive mediator as depression (Study III). In other words, the more a participant reported understanding their emotions and the less emotions were experienced as repeatedly overwhelming and upsetting, the more somatic symptoms were reduced. This idea is further illustrated in Study IV, where concrete examples of emotional processing taking place are demonstrated. It is unclear why the mediational result differed somewhat between Study II and Study III, but this might be due to sampling or differences in the statistical analyses applied.

There are some reasons why emotional processing might mediate somatic symptom reductions in EAET for patients with FSD. Previous research has found emotional processing deficits in patients with FSD [153,184–186] and that emotional processing mediate the relationship between childhood adversity and psychiatric [187] and somatic symptoms [188]. In addition, research has demonstrated that the more a patient is able to express their emotions, the better the treatment effect [189] or insights gained [112]. Further, successful psychodynamic treatment for panic disorder – that is, reduced anxiety – is driven by an increased capacity to express emotions [190]. As EAET specifically aims to increase emotional awareness (i.e., decrease impoverished emotional experiences) and express emotions (i.e., decrease signs of unprocessed emotions), the findings from Studies II and III that emotional processing mediates somatic symptom reduction are plausible. They parallel research where psychological treatment of post-traumatic stress disorder contribute not only to reduced trauma symptoms but also to reduced somatic symptoms and disability [191].

To know if a change mechanism is truly targeted, one needs a way to measure it, and measurements need to be precise. This thesis has placed emphasis on two measures: the PHQ-15 and the EPS-25. Both instruments have been validated and translated into many different languages and are deemed to have adequate psychometric properties [114,116,144,148,192,193]. However, some concerns need to be discussed. As I learned more about the EPS-25, it became evident that it lacked certain basic psychometric properties, such as that test-retest reliability had not been explored in psychiatric populations and that the five-

¹¹ Note that some newly developed CBT protocols do focus on downregulating negative emotions [67,68].

¹² Note that signs of unprocessed emotions and depression were significant single mediators for pain (measured with the Brief Pain Scale-4), but only depression stayed significant in the multiple mediator analysis.

factor structure (which the mediational analyses in Studies II and III were built upon) has been difficult to replicate [194]. Using data from Study I, we were able to demonstrate an adequate test-retest reliability, but not replicate the five-factor structure [194]. Moreover, the PHQ-15 was initially validated using “one month” as a criterion for somatic symptom severity, but it was used to measure changes weekly in the mediational design in Study II. However, changing the measurement point from 1 month to 1 week has not been found to substantially lower internal reliability [195]. Lastly, the PHQ-15 have been found to have good internal reliability, but in Studies I and III it was only acceptable. Overall, it should be acknowledged that these problems with psychometric properties and deviations might create measurement errors and pose somewhat of a threat towards the robustness of the mediational results.

There are some further concerns regarding emotional processing functioning as a mediator in EAET. First, the mediational analysis in Study II was part of an uncontrolled design and could not demonstrate causality; merely that there was an association between changes in the variables of emotional processing and somatic symptoms. Therefore, it might be that reduced somatic symptoms influences one’s capacity to process emotions, not vice versa. Second, despite strengthening the case of unprocessed emotions as a possible mediator, Study III did not make use of a time-lagged analysis and therefore, in essence, the mediational analysis employed was still more focused on associations between the studied variables. An active concurrent treatment with its own theoretical mediator [196], clearly distinct from emotional processing, would strengthen causal inferences on potential active treatment mechanisms [197]. The quest for delineating treatment mechanisms in FSD and EAET remains, although there is preliminary evidence that facets of emotional processing function as a mediator in I-EAET.

6.3 DIFFICULTIES FINDING AN ADEQUATE DIAGNOSIS WHEN TREATMENT IS INFORMED BY EAET

The difficulties with choosing an appropriate diagnosis for patients with distressing somatic symptoms is evident in the studies in this dissertation, and in the research field at large, where idiosyncratic inclusion criteria in RCTs are sometimes used [67,198].¹³ Starting with the idea that SSD would be the study population, my coworkers and I realized that this broad diagnosis was too heterogenous and did not really fit the EAET model, with its focus on ruling out

¹³ In the aforementioned RCTs, one example of idiosyncratic inclusions criteria was that despite the intervention targeting the same population (participants with “persistent physical symptoms”), the inclusion score of PHQ-15 was above 4 in one study [198], but above 5 in the other study [67].

medically explained symptoms. We therefore tried to limit the study population to SSD with what we called “centralized features.” In other words, we excluded participants with somatic symptoms and a well-defined medical diagnosis (e.g., rheumatoid arthritis, cancer). Moreover, we ruled in patients with symptom preoccupation (using the definition of SSD), but also occurrence of “central sensitization” (such as allodynia or hyperalgesia) [199].¹⁴ In effect, Study I had a heterogenous population with about 40% of the patients self-reporting a fibromyalgia diagnosis, and about 25% having IBS, while other people suffered from migraine, tinnitus, chronic fatigue syndrome, etc. Evaluating our pilot study (Study I), we realized that we had no systematic or reliable assessment of central sensitization features. For Study III, we instead used the recently introduced FSD as a diagnosis, where patients needed to present with a distressing somatic symptom or symptoms and the potential presence of associated psychological features was also evaluated.

There are several reasons why using the term FSD in EAET research can be advantageous. FSD includes the possibility to assess a broad range of psychological features that affect the disease trajectory or treatment, not just preoccupation with somatic symptoms per se [200].¹⁵ This is especially relevant when research is informed by psychodynamic theory that places less emphasis on symptom preoccupation and instead focuses on other mechanisms such as alexithymia or emotional regulation difficulties. However, it should be acknowledged that neither the reliability nor the validity of the FSD diagnosis is established, in contrast to SSD [34]. Moreover, the diagnosis used has an impact on the generalizability of findings.

6.3.1 The generalizability of the findings

The generalizability of the findings from Studies I–IV should be seen in the context of using a revised SSD diagnosis (Study I), and in using the newly proposed FSD diagnosis (Study III). The results obtained therefore apply only to patients with chronic (typically over 6 months) medically unexplained somatic symptoms who have psychological reactions accompanying the symptoms, such as heightened anxiety. In particular, the results apply to patients with functional somatic symptoms/syndromes (e.g., headache, IBS) who *also* fulfill criteria for medically unexplained SSD. The results do not apply to the large population of patients with

¹⁴ According to Lumley and Schubiner [26], there are clinical clues that help ‘rule in’ central sensitization: “pain that persists after tissue healing, is intermittent, shifts locations, occurs in a distribution that is not neurophysiologic, is triggered by mild stimuli (such as sound, light, foods, weather changes, light touch), or varies with time of day or stressful life events.”

¹⁵ There are good reasons for having a focus on symptom preoccupation, as catastrophizing, worry etc. is often seen in patients with SSD, and there are CBT treatment models that can effectively diminish these symptoms [36].

FSD who do not show psychological reactions towards their symptoms. Nor do the results generalize to the whole broad group of patients with SSD, which includes patients with somatic symptoms that are part of a medical disease.

Moreover, the generalizability of the findings of Studies I–IV is limited due to the sample being almost exclusively female, experienced with psychological therapy, relatively well-educated, employed, and self-selected into the study based on an interest in investigating possible emotional factors contributing to somatic symptoms. Thus, the results of Studies I–IV do not apply to patients who are seen in routine care or who are skeptical to how psychological variables might influence their somatic symptoms.

7 CONCLUSIONS

To summarize, Studies I–IV in this dissertation have successfully demonstrated that a feasible, credible, and a quite effective and safe I-EAET can be carried out in a population fulfilling the criteria for FSD and SSD. Future research is needed to corroborate these findings and compare I-EAET to active treatments, preferably in routine care. There are preliminary findings that unprocessed emotions, or more specifically, emotions that are found to be intrusive, lasting, and overwhelming, need to be resolved to reduce somatic symptoms, but it is premature to talk about this as a mechanism of change. Further research of FSD should be informed by theory and, ideally, two different treatment protocols with different distinctive mechanisms should be compared to fully establish which mediating variables are of importance. Lastly, given that only a minority of patients with FSD have a substantial somatic symptom reduction from I-EAET, it is important to continue to develop more effective protocols and use, for example, predictor studies to see who benefits from I-EAET and who does not.

8 POINTS OF PERSPECTIVE

I have already discussed findings, important limitations, and future directions in this research. Here, I present some lingering concerns of a broad nature.

As previously described, there is a rather intense ongoing research to find more effective treatments for patients with FSD. These endeavors all have a short treatment period with a short follow-up period and the question is if this is the only way forward. Using EAET as an example, it has been evaluated using either one therapy session, eight group sessions, or ten treatment modules (I-EAET) with follow-up periods between six weeks and six months. Is this development of short interventions driven only by the interest in finding effective treatments for patients? Or does it reflect a lack of funding or a necessity to “produce” research? It is difficult to understand why patients with functional somatic disorders would need a shorter treatment format than, say, patients with panic disorder, where evidence-based protocols for panic disorder usually last 12–24 sessions [201]. Ideally, further research into EAET for FSD could include a more comprehensive stepped care approach where patients might initially be offered one session treatment, but could then be given the opportunity to take part in group EAET or I-EAET. If a need of treatment still remained, they could also be offered a full-length¹⁶ individual short-term psychodynamic treatment. Using this approach would hopefully mean that more patients responded to treatment, in contrast to the 21–26% that current research for EAET has shown.

EAET have been able to demonstrate an effect with various follow-up periods, but no study has had a longer follow-up period than six months. The question remains what happens to these patients in the long run. It is my own clinical experience working at a psychiatric outpatient unit or a primary care center that many patients who either remitted or responded to treatment seek out treatment again after time has passed. So far, no long-term follow-up studies (12 or 24 months) of EAET exists. Such studies are necessary but would be resource-demanding.

As mentioned briefly in the introduction, there are sometimes polarized discussions both in society and among researchers on how best to diagnose patients with distressing somatic symptoms. This has left patients suffering and caused researchers to withdraw from the field. For example, using terms such as “medically unexplained” symptoms or “functional somatic syndromes” has been shown to be problematic in several ways. One concern relates to reliability. Physicians do not always make the same assessment of whether a symptom or

¹⁶ Short-term psychodynamic therapy is usually defined as lasting no longer than 40 sessions.

constellations of symptoms is medically explained or not [202]. The definition also raises concerns of validity. Might it be that the symptoms of some of these patients with proposed medically unexplained symptoms could be medically explained? Some researchers argue that the group of patients with medically unexplained symptoms includes patients with some disease. One example refers to chronic fatigue syndrome, which is sometimes regarded as a functional somatic syndrome [3], while other researchers find the symptoms to be attributable to disease and use the term myalgic encephalomyelitis [203]. The debate on how to classify chronic fatigue syndrome has even reached the political level, where the Danish parliament recently voted unanimously to state that chronic fatigue syndrome is not a functional somatic syndrome [204]. What constitutes a medically unexplained somatic symptom or set of symptoms is not straightforward and is affected by both scientific and societal concerns. Personally, I find it doubtful to leave a decision on nomenclature to politicians, as was done in the Danish parliament which voted on how to best categorize chronic fatigue syndrome. Increased cross-professional cooperations with further integration of psychological and medical treatment might create an opportunity to further increase the effectiveness of EAET for FSD. Moreover, using both biological and psychological measures, for example by studying emotional processing deficits in relation to autonomous nervous system aberrations could further delineate the possible interaction of these factors in EAET treatment.

9 ACKNOWLEDGEMENTS

It has been a fantastic rollercoaster ride, finishing a PhD thesis. Sometimes it was belly-tickling, sometimes nerve-wracking, awakening an urge to scream. Beforehand, I didn't think I had the ability to present a field as intricate as that of functional somatic disorders and psychodynamic therapy. There are several people who made this possible:

My greatest thanks go to my main supervisor Robert Johansson, who in a true sense acted as Socrates' famous midwife and instilled ideas in me that I didn't think I had and helped devise a structure for my thoughts. Robert, your thoughtfulness in both big and small gestures has made me feel that I may truly have a story to tell.

Many thanks also to Mark Lumley, my co-supervisor, and Howard Schubiner, who both developed Emotional Awareness and Expression Therapy and who not only generously shared materials, but also gave countless hours of their time for free to lecture and tutor on the method. Without your generosity, this thesis would not have been possible.

And my other co-supervisors! Brjánn Ljótsson, who made me feel warmly welcomed to a CBT research group, despite being the only one conducting psychodynamically informed research. And without your R script, Brjánn, the research would have not come this far. Peter Lilliengren, despite being in the background, you always took a step forward when needed – reading and thoughtfully commenting on manuscripts. Indre B Ljungar, who initially believed in my ability to do research and used your own resources to let me take my first step as researcher visiting a conference in Saint Petersburg. Thank you all for your support along the way.

My mentor, Christian Oldenburg, you have been with me, in one way or another, from the beginning of my psychology career. That has created a stability. Furthermore, you are always so succinct and to the point!

Erland Axelsson, my co-worker who has such a vast knowledge of the research field, and always reads things so carefully, without missing any details.

I would also like to say a big thank you to what we now call the “EAET gang”: Henrik Hallberg, Rose-Marie Widlund, Josefine Ek, Stina Björngrim and Arwa Josefsson who dared come with me on this journey, sacrificed much of their precious free time to work as therapists, listened to me, and dared to challenge me when I tried out my thoughts with you.

Last, but first in my heart: Sofi, Viggo, Tea, Edward, and Ludwig – my big bonus family: what a ride we have taken, laughing, crying, and exploring the adventures of life. You have been the frame which held my drawing together.

And to all of patients that I have had the privilege to meet and tried to help, who kindly agreed to answer all the thousand billion research questions: I believe you can get and feel better!

10 REFERENCES

- [1] American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, 5th Edn. Arlington; 2013.
- [2] on behalf of the EURONET-SOMA Group, Burton C, Fink P, Henningsen P, Löwe B, Rief W. Functional somatic disorders: discussion paper for a new common classification for research and clinical use. *BMC Med* 2020;18:34. <https://doi.org/10.1186/s12916-020-1505-4>.
- [3] Wessely S, Nimnuan C, Sharpe M. Functional somatic syndromes: one or many? *The Lancet* 1999;354:936–9. [https://doi.org/10.1016/S0140-6736\(98\)08320-2](https://doi.org/10.1016/S0140-6736(98)08320-2).
- [4] Melville D. Descriptive clinical research and medically unexplained physical symptoms. *Journal of Psychosomatic Research* 1987;31:359–65. [https://doi.org/10.1016/0022-3999\(87\)90056-0](https://doi.org/10.1016/0022-3999(87)90056-0).
- [5] Fink P, Schröder A. One single diagnosis, bodily distress syndrome, succeeded to capture 10 diagnostic categories of functional somatic syndromes and somatoform disorders. *Journal of Psychosomatic Research* 2010;68:415–26. <https://doi.org/10.1016/j.jpsychores.2010.02.004>.
- [6] World Health Organization. ICD-11: International classification of diseases (11th revision). 2022.
- [7] Haller H, Cramer H, Lauche R, Dobos G. Somatoform Disorders and Medically Unexplained Symptoms in Primary Care. *Deutsches Aerzteblatt Online* 2015. <https://doi.org/10.3238/arztebl.2015.0279>.
- [8] Fischer S, Nater U. Functional somatic syndromes: asking about exclusionary medical conditions results in decreased prevalence and overlap rates. *BMC Public Health* 2014;14:1034. <https://doi.org/10.1186/1471-2458-14-1034>.
- [9] Yunus MB. Central Sensitivity Syndromes: A New Paradigm and Group Nosology for Fibromyalgia and Overlapping Conditions, and the Related Issue of Disease versus Illness. *Seminars in Arthritis and Rheumatism* 2008;37:339–52. <https://doi.org/10.1016/j.semarthrit.2007.09.003>.
- [10] Erdrich S, Hawrelak JA, Myers SP, Harnett JE. A systematic review of the association between fibromyalgia and functional gastrointestinal disorders. *Therap Adv Gastroenterol*. 2020 Dec 8;13:1756284820977402. doi: 10.1177/1756284820977402.
- [11] Camilleri M. Diagnosis and Treatment of Irritable Bowel Syndrome: A Review. *JAMA* 2021;325:865. <https://doi.org/10.1001/jama.2020.22532>.
- [12] Restrepo M, Restrepo D. From conversion disorders to functional neurological disorders. Overcoming the rule-out diagnosis? *Revista Colombiana de Psiquiatría (English Ed)* 2019;48:174–81. <https://doi.org/10.1016/j.rcpeng.2017.10.005>.
- [13] American Psychiatric Association. Diagnostic and statistical manual of mental disorders 4th ed. Washington, D.C.: 2000.
- [14] Lynch DJ, McGrady A, Nagel R, Zsembik C. Somatization in Family Practice: Comparing 5 Methods of Classification. *Prim Care Companion J Clin Psychiatry*. 1999 Jun;1(3):85-89. doi: 10.4088/pcc.v01n0305.
- [15] Kroenke K. Multisomatoform Disorder: An Alternative to Undifferentiated Somatoform Disorder for the Somatizing Patient in Primary Care. *Arch Gen Psychiatry* 1997;54:352. <https://doi.org/10.1001/archpsyc.1997.01830160080011>.
- [16] Lubet S, Tuller D. The concept of ‘illness without disease’ impedes understanding of chronic fatigue syndrome: a response to Sharpe and Greco. *Med Humanities* 2021;47:e1–e1. <https://doi.org/10.1136/medhum-2019-011807>.
- [17] Krey, J. Patientförening försökte stoppa forskning om ME. *Dagens Medicin* 2015 [Hämtad 20210331].
- [18] Geraghty K, Jason L, Sunnquist M, Tuller D, Blease C, Adeniji C. The ‘cognitive behavioural model’ of chronic fatigue syndrome: Critique of a flawed model. *Health Psychology Open* 2019;6:205510291983890. <https://doi.org/10.1177/2055102919838907>.
- [19] Geraghty K, Scott MJ. Treating medically unexplained symptoms via improving access to psychological therapy (IAPT): major limitations identified. *BMC Psychol* 2020;8:13. <https://doi.org/10.1186/s40359-020-0380-2>.
- [20] Twisk FNM, Maes M. A review on cognitive behavioral therapy (CBT) and graded exercise therapy (GET) in myalgic encephalomyelitis (ME) / chronic fatigue syndrome (CFS):

CBT/GET is not only ineffective and not evidence-based, but also potentially harmful for many patients with ME/CFS. *Chronic Fatigue Syndrome* 2009;16.

- [21] Marks DF. Special issue on the PACE Trial. *J Health Psychol* 2017;22:1103–5. <https://doi.org/10.1177/1359105317722370>.
- [22] Wilshire CE, Kindlon T. Response: Sharpe, Goldsmith and Chalder fail to restore confidence in the PACE trial findings. *BMC Psychol* 2019;7:19. <https://doi.org/10.1186/s40359-019-0296-x>.
- [23] Rief W, Isaac M. The future of somatoform disorders: somatic symptom disorder, bodily distress disorder or functional syndromes? *Current Opinion in Psychiatry* 2014;27:315–9. <https://doi.org/10.1097/YCO.000000000000089>.
- [24] Ghanizadeh A, Firoozabadi A. A review of somatoform disorders in DSM-IV and somatic symptom disorders in proposed DSM-V. *Psychiatr Danub*. 2012 Dec;24(4):353-8.
- [25] Rief W, Martin A. How to Use the New DSM-5 Somatic Symptom Disorder Diagnosis in Research and Practice: A Critical Evaluation and a Proposal for Modifications. *Annu Rev Clin Psychol* 2014;10:339–67. <https://doi.org/10.1146/annurev-clinpsy-032813-153745>.
- [26] Lumley MA, Schubiner H. Emotional Awareness and Expression Therapy for Chronic Pain: Rationale, Principles and Techniques, Evidence, and Critical Review. *Curr Rheumatol Rep* 2019;21:30. <https://doi.org/10.1007/s11926-019-0829-6>.
- [27] Lumley MA, Schubiner H. Psychological Therapy for Centralized Pain: An Integrative Assessment and Treatment Model. *Psychosom Med* 2019;81:114–24. <https://doi.org/10.1097/PSY.0000000000000654>.
- [28] Maroti, D. Smärtans budskap. Om känslfokuserad terapi vid funktionella somatiska syndrom. Stockholm: Borells förlag; 2022.
- [29] Abbass, A. & Schubiner, H. *Hidden From View: A clinician’s guide to psychophysiologic disorders*. LLC: Psychophysiologic Press; 2018.
- [30] Abbass A. Somatization: Diagnosing it sooner through emotion-focused interviewing. *J Fam Pract*. 2005 Mar;54(3):231-9, 243.
- [31] Abbass A, Lovas D, Purdy A. Direct Diagnosis and Management of Emotional Factors in Chronic Headache Patients. *Cephalalgia* 2008;28:1305–14. <https://doi.org/10.1111/j.1468-2982.2008.01680.x>.
- [32] Oka P, Parr H, Barberio B, Black CJ, Savarino EV, Ford AC. Global prevalence of irritable bowel syndrome according to Rome III or IV criteria: a systematic review and meta-analysis. *The Lancet Gastroenterology & Hepatology* 2020;5:908–17. [https://doi.org/10.1016/S2468-1253\(20\)30217-X](https://doi.org/10.1016/S2468-1253(20)30217-X).
- [33] Heidari F, Afshari M, Moosazadeh M. Prevalence of fibromyalgia in general population and patients, a systematic review and meta-analysis. *Rheumatol Int* 2017;37:1527–39. <https://doi.org/10.1007/s00296-017-3725-2>.
- [34] Löwe B, Levenson J, Depping M, Hüsing P, Kohlmann S, Lehmann M, et al. Somatic symptom disorder: a scoping review on the empirical evidence of a new diagnosis. *Psychol Med* 2022;52:632–48. <https://doi.org/10.1017/S0033291721004177>.
- [35] Häuser W, Bialas P, Welsch K, Wolfe F. Construct validity and clinical utility of current research criteria of DSM-5 somatic symptom disorder diagnosis in patients with fibromyalgia syndrome. *Journal of Psychosomatic Research* 2015;78:546–52. <https://doi.org/10.1016/j.jpsychores.2015.03.151>.
- [36] Axelsson E, Hedman-Lagerlöf M, Hedman-Lagerlöf E, Ljótsson B, Andersson E. Symptom Preoccupation in Fibromyalgia: Prevalence and Correlates of Somatic Symptom Disorder in a Self-Recruited Sample. *Psychosomatics* 2020;61:268–76. <https://doi.org/10.1016/j.psych.2020.01.012>.
- [37] Ketterer, M W; Buckholtz, C D. Somatization disorder. *J Am Osteopath Assoc* 1989;Vol.89:489–95.
- [38] Häuser W, Ablin J, Fitzcharles M-A, Littlejohn G, Luciano JV, Usui C, et al. Fibromyalgia. *Nat Rev Dis Primers* 2015;1:15022. <https://doi.org/10.1038/nrdp.2015.22>.
- [39] Rask MT, Ørnbøl E, Rosendal M, Fink P. Long-Term Outcome of Bodily Distress Syndrome in Primary Care: A Follow-Up Study on Health Care Costs, Work Disability, and Self-Rated Health. *Psychosomatic Medicine* 2017;79:345–57. <https://doi.org/10.1097/PSY.0000000000000405>.

- [40] Rask MT, Rosendal M, Fenger-Grøn M, Bro F, Ørnbøl E, Fink P. Sick leave and work disability in primary care patients with recent-onset multiple medically unexplained symptoms and persistent somatoform disorders: a 10-year follow-up of the FIP study. *General Hospital Psychiatry* 2015;37:53–9. <https://doi.org/10.1016/j.genhosppsych.2014.10.007>.
- [41] Henningsen P. Management of somatic symptom disorder. *Dialogues in Clinical Neuroscience* 2018;20:9.
- [42] Levine D, Horesh D. Suicidality in Fibromyalgia: A Systematic Review of the Literature. *Front Psychiatry* 2020;11:535368. <https://doi.org/10.3389/fpsy.2020.535368>.
- [43] Morales-Espinoza EM, Kostov B, Salami DC, Perez ZH, Rosalen AP, Molina JO, et al. Complexity, comorbidity, and health care costs associated with chronic widespread pain in primary care. *Pain* 2016;157:818–26. <https://doi.org/10.1097/j.pain.0000000000000440>.
- [44] Deyo RA, Mirza SK, Turner JA, Martin BI. Overtreating Chronic Back Pain: Time to Back Off? *The Journal of the American Board of Family Medicine* 2009;22:62–8. <https://doi.org/10.3122/jabfm.2009.01.080102>.
- [45] Vowles KE, McEntee ML, Julnes PS, Frohe T, Ney JP, van der Goes DN. Rates of opioid misuse, abuse, and addiction in chronic pain: a systematic review and data synthesis. *Pain* 2015;156:569–76. <https://doi.org/10.1097/01.j.pain.0000460357.01998.f1>.
- [46] Fink, P. *Persistent Somatization*. Aarhus: Psychiatric University Hospital in Aarhus; 1997.
- [47] Kleykamp BA, Ferguson MC, McNicol E, Bixho I, Arnold LM, Edwards RR, et al. The Prevalence of Psychiatric and Chronic Pain Comorbidities in Fibromyalgia: an systematic review. *Seminars in Arthritis and Rheumatism* 2021;51:166–74. <https://doi.org/10.1016/j.semarthrit.2020.10.006>.
- [48] Henningsen P, Zimmermann T, Sattel H. Medically Unexplained Physical Symptoms, Anxiety, and Depression: A Meta-Analytic Review. *Psychosomatic Medicine* 2003;65:528–33. <https://doi.org/10.1097/01.PSY.0000075977.90337.E7>.
- [49] Hahn SR, Kroenke K, Spitzer RL, Brody D, Williams JBW, Linzer M, et al. The difficult patient: Prevalence, psychopathology, and functional impairment. *J Gen Intern Med* 1996;11:1–8. <https://doi.org/10.1007/BF02603477>.
- [50] Jackson JL. The Effect of Unmet Expectations among Adults Presenting with Physical Symptoms. *Ann Intern Med* 2001;134:889. https://doi.org/10.7326/0003-4819-134-9_Part_2-200105011-00013.
- [51] Meadows, L., Lackner, S. & Belic, M. Irritable Bowel Syndrome - an exploration of the patient perspective. *Clinical Nursing Journal* 1997;6:156–70.
- [52] Bertram, S., Kurland, M., Lydick, E., Locke G. & Yawn, B. The patient's perspective of irritable bowel syndrome. *J Fam Pract* 2001;50:521–5.
- [53] Blondel-Hill E, Shafran SD. Treatment of the Chronic Fatigue Syndrome: A Review and Practical Guide. *Drugs* 1993;46:639–51. <https://doi.org/10.2165/00003495-199346040-00005>.
- [54] Biernikiewicz M, Taieb V, Toumi M. Characteristics of doctor-shoppers: a systematic literature review. *Journal of Market Access & Health Policy* 2019;7:1595953. <https://doi.org/10.1080/20016689.2019.1595953>.
- [55] Hinchey SA, Jackson JL. A Cohort Study Assessing Difficult Patient Encounters in a Walk-In Primary Care Clinic, Predictors and Outcomes. *J Gen Intern Med* 2011;26:588–94. <https://doi.org/10.1007/s11606-010-1620-6>.
- [56] Allen LA, Woolfolk RL, Escobar JI, Gara MA, Hamer RM. Cognitive-Behavioral Therapy for Somatization Disorder: A Randomized Controlled Trial. *Arch Intern Med* 2006;166:1512. <https://doi.org/10.1001/archinte.166.14.1512>.
- [57] Yarns BC, Lumley MA, Cassidy JT, Steers WN, Osato S, Schubiner H, et al. Emotional Awareness and Expression Therapy Achieves Greater Pain Reduction than Cognitive Behavioral Therapy in Older Adults with Chronic Musculoskeletal Pain: A Preliminary Randomized Comparison Trial. *Pain Medicine* 2020;21:2811–22. <https://doi.org/10.1093/pm/pnaa145>.
- [58] Schröder A, Rehfeld E, Ørnbøl E, Sharpe M, Licht RW, Fink P. Cognitive-behavioural group treatment for a range of functional somatic syndromes: Randomised trial. *Br J Psychiatry* 2012;200:499–507. <https://doi.org/10.1192/bjp.bp.111.098681>.

- [59] Williams AC de C, Fisher E, Hearn L, Eccleston C. Psychological therapies for the management of chronic pain (excluding headache) in adults. *Cochrane Database of Systematic Reviews* 2020;2021. <https://doi.org/10.1002/14651858.CD007407.pub4>.
- [60] van Dessel N, den Boeft M, van der Wouden JC, Kleinstäuber M, Leone SS, Terluin B, et al. Non-pharmacological interventions for somatoform disorders and medically unexplained physical symptoms (MUPS) in adults. *Cochrane Database of Systematic Reviews* 2014. <https://doi.org/10.1002/14651858.CD011142.pub2>.
- [61] Bernardy K, Klose P, Welsch P, Häuser W. Efficacy, acceptability and safety of cognitive behavioural therapies in fibromyalgia syndrome - A systematic review and meta-analysis of randomized controlled trials. *Eur J Pain* 2018;22:242–60. <https://doi.org/10.1002/ejp.1121>.
- [62] Öst L-G. The efficacy of Acceptance and Commitment Therapy: An updated systematic review and meta-analysis. *Behaviour Research and Therapy* 2014;61:105–21. <https://doi.org/10.1016/j.brat.2014.07.018>.
- [63] Rickardsson, J, Gentili, C, Holmström, L, Zetterqvist, V, Andersson, E, Persson, J, et al. Internet-delivered acceptance and commitment therapy as microlearning for chronic pain: A randomized controlled trial with 1-year follow-up. *European Journal of Pain* 2021;25:1012–30. <https://doi.org/10.1002/ejp.1723>.
- [64] Albuquerque MLL, Monteiro D, Marinho DA, Vilarino GT, Andrade A, Neiva HP. Effects of different protocols of physical exercise on fibromyalgia syndrome treatment: systematic review and meta-analysis of randomized controlled trials. *Rheumatol Int* 2022;42:1893–908. <https://doi.org/10.1007/s00296-022-05140-1>.
- [65] Ljótsson B, Andersson G, Andersson E, Hedman E, Lindfors P, Andréewitch S, et al. Acceptability, effectiveness, and cost-effectiveness of internet-based exposure treatment for irritable bowel syndrome in a clinical sample: a randomized controlled trial. *BMC Gastroenterol* 2011;11:110. <https://doi.org/10.1186/1471-230X-11-110>.
- [66] Hedman-Lagerlöf M, Hedman-Lagerlöf E, Axelsson E, Ljótsson B, Engelbrektsson J, Hultkrantz S, et al. Internet-Delivered Exposure Therapy for Fibromyalgia: A Randomized Controlled Trial. *The Clinical Journal of Pain* 2018;34:532–42. <https://doi.org/10.1097/AJP.0000000000000566>.
- [67] Kleinstäuber M, Allwang C, Bailer J, Berking M, Brünahl C, Erkić M, et al. Cognitive Behaviour Therapy Complemented with Emotion Regulation Training for Patients with Persistent Physical Symptoms: A Randomised Clinical Trial. *Psychother Psychosom* 2019;88:287–99. <https://doi.org/10.1159/000501621>.
- [68] Boersma K, Södermark M, Hesser H, Flink IK, Gerdl B, Linton SJ. Efficacy of a transdiagnostic emotion-focused exposure treatment for chronic pain patients with comorbid anxiety and depression: a randomized controlled trial. *Pain* 2019;160:1708–18. <https://doi.org/10.1097/j.pain.0000000000001575>.
- [69] Nemiah JC. Breuer, Josef and Freud, Sigmund (1895/1995), *Studies on Hysteria*. In James Strachey (Ed.) *The Standard Edition of the Complete Psychological Works of Sigmund Freud*. London: Hogarth Press, Vol.2, xxxii, pp. 1–335. Null 1996;38:234–7. <https://doi.org/10.1080/00029157.1996.10403343>.
- [70] Abbass A, Town J, Holmes H, Luyten P, Cooper A, Russell L, et al. Short-Term Psychodynamic Psychotherapy for Functional Somatic Disorders: A Meta-Analysis of Randomized Controlled Trials. *Psychother Psychosom* 2020:1–8. <https://doi.org/10.1159/000507738>.
- [71] Abbass A, Lumley MA, Town J, Holmes H, Luyten P, Cooper A, et al. Short-term psychodynamic psychotherapy for functional somatic disorders: A systematic review and meta-analysis of within-treatment effects. *Journal of Psychosomatic Research* 2021:110473. <https://doi.org/10.1016/j.jpsychores.2021.110473>.
- [72] Abbass A, Town JM, Kisely S. Intensive Short-term Dynamic Psychotherapy for Pain. *Journal of Anesthesiology and Pain Therapy* 2022; 3 (2): 4-7.
- [73] Lumley MA, Schubiner H, Lockhart NA, Kidwell KM, Harte SE, Clauw DJ, et al. Emotional awareness and expression therapy, cognitive behavioral therapy, and education for fibromyalgia: a cluster-randomized controlled trial. *Pain* 2017;158:2354–63. <https://doi.org/10.1097/j.pain.0000000000001036>.
- [74] Thakur ER, Holmes HJ, Lockhart NA, Carty JN, Ziadni MS, Doherty HK, et al. Emotional awareness and expression training improves irritable bowel syndrome: A randomized

- controlled trial. *Neurogastroenterol Motil.* 2017 Dec;29(12):10.1111/nmo.13143. doi: 10.1111/nmo.13143.
- [75] Carty JN, Ziadni MS, Holmes HJ, Tomakowsky J, Peters K, Schubiner H, et al. The Effects of a Life Stress Emotional Awareness and Expression Interview for Women with Chronic Urogenital Pain: A Randomized Controlled Trial. *Pain Medicine* 2019;20:1321–9. <https://doi.org/10.1093/pm/pny182>.
- [76] Ziadni MS, Carty JN, Doherty HK, Porcerelli JH, Rapport LJ, Schubiner H, et al. A life-stress, emotional awareness, and expression interview for primary care patients with medically unexplained symptoms: A randomized controlled trial. *Health Psychology* 2018;37:282–90. <https://doi.org/10.1037/hea0000566>.
- [77] Krystal H. Desomatization and the consequences of infantile psychic trauma. *Psychoanalytic Inquiry* 1997;17:126–50. <https://doi.org/10.1080/07351699709534116>.
- [78] Waller E, Scheidt CE. Somatoform disorders as disorders of affect regulation: A development perspective. *International Review of Psychiatry* 2006;18:13–24. <https://doi.org/10.1080/09540260500466774>.
- [79] Blagys MD, Hilsenroth MJ. Distinctive features of short-term psychodynamic-interpersonal psychotherapy: A review of the comparative psychotherapy process literature. *Clinical Psychology: Science and Practice* 2000;7:167–88. <https://doi.org/10.1093/clipsy.7.2.167>.
- [80] Ogrodniczuk JS, Joyce AS, Abbass AA. Childhood Maltreatment and Somatic Complaints among Adult Psychiatric Outpatients: Exploring the Mediating Role of Alexithymia. *Psychother Psychosom* 2014;83:322–4. <https://doi.org/10.1159/000363769>.
- [81] Abbass, A. Reaching through resistance: advanced psychotherapy techniques. Kansas City: Seven Leaves Press; 2015.
- [82] Coppens E, Van Wambeke P, Morlion B, Weltens N, Gao Ly H, Tack J, et al. Prevalence and impact of childhood adversities and post-traumatic stress disorder in women with fibromyalgia and chronic widespread pain. *Eur J Pain* 2017;21:1582–90. <https://doi.org/10.1002/ejp.1059>.
- [83] Puig J, Englund MM, Simpson JA, Collins WA. Predicting adult physical illness from infant attachment: A prospective longitudinal study. *Health Psychology* 2013;32:409–17. <https://doi.org/10.1037/a0028889>.
- [84] Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz AM, Edwards V, et al. REPRINT OF: Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine* 2019;56:774–86. <https://doi.org/10.1016/j.amepre.2019.04.001>.
- [85] Afari N, Ahumada SM, Wright LJ, Mostoufi S, Golnari G, Reis V, et al. Psychological Trauma and Functional Somatic Syndromes: A Systematic Review and Meta-Analysis. *Psychosomatic Medicine* 2014;76:2–11. <https://doi.org/10.1097/PSY.000000000000010>.
- [86] Beesley H, Rhodes J, Salmon P. Anger and childhood sexual abuse are independently associated with irritable bowel syndrome. *British Journal of Health Psychology* 2010;15:389–99. <https://doi.org/10.1348/135910709X466496>.
- [87] Jones GT, Power C, Macfarlane GJ. Adverse events in childhood and chronic widespread pain in adult life: Results from the 1958 British Birth Cohort Study. *Pain* 2009;143:92–6. <https://doi.org/10.1016/j.pain.2009.02.003>.
- [88] Kivimaki M, Leinoarjas P, Virtanen M, Elovainio M, Keltikangasjarvinen L, Puttonen S, et al. Work stress and incidence of newly diagnosed fibromyalgiaProspective cohort study. *Journal of Psychosomatic Research* 2004;57:417–22. [https://doi.org/10.1016/S0022-3999\(03\)00620-2](https://doi.org/10.1016/S0022-3999(03)00620-2).
- [89] Luyten P, Fonagy P. Psychodynamic Psychotherapy for Patients With Functional Somatic Disorders and the Road to Recovery. *APT* 2020;73:125–30. <https://doi.org/10.1176/appi.psychotherapy.20200010>.
- [90] Yarns BC, Zhu TA, Najafian Jazi A. Chronic Pain in Older Adults: A Neuroscience-Based Psychological Assessment and Treatment Approach. *The American Journal of Geriatric Psychiatry* 2022:S1064748122004808. <https://doi.org/10.1016/j.jagp.2022.07.009>.
- [91] Frederickson JJ, Messina I, Grecucci A. Dysregulated Anxiety and Dysregulating Defenses: Toward an Emotion Regulation Informed Dynamic Psychotherapy. *Front Psychol* 2018;9:2054. <https://doi.org/10.3389/fpsyg.2018.02054>.

- [92] Davanloo, H. Intensive Short-Term Dynamic Psychotherapy Extended Major Direct Access to the Unconscious. *European Psychotherapy* 2001;2:25–70.
- [93] Rice TR, Hoffman L. Defense Mechanisms and Implicit Emotion Regulation: A Comparison of a Psychodynamic Construct with One from Contemporary Neuroscience. *J Am Psychoanal Assoc* 2014;62:693–708. <https://doi.org/10.1177/0003065114546746>.
- [94] Ed. Strachey, J. The Standard Edition of the Complete Psychological Works of Sigmund Freud. “The Psycho-Analytic View of Psychogenic Disturbance of Vision.” London: Hogarth Press; 1999.
- [95] Weinberger DA, Schwartz GE, Davidson RJ. Low-anxious, high-anxious, and repressive coping styles: psychometric patterns and behavioral and physiological responses to stress. *J Abnorm Psychol.* 1979 Aug;88(4):369-80. doi: 10.1037//0021-843x.88.4.369.
- [96] Myers LB. The importance of the repressive coping style: findings from 30 years of research. *Anxiety, Stress & Coping* 2010;23:3–17. <https://doi.org/10.1080/10615800903366945>.
- [97] Brosschot JF, Aarsse HR. Restricted Emotional Processing and Somatic Attribution in Fibromyalgia. *Int J Psychiatry Med* 2001;31:127–46. <https://doi.org/10.2190/K7AU-9UX9-W8BW-TETL>.
- [98] Burns JW, Quartana PJ, Bruehl S. Anger inhibition and pain: conceptualizations, evidence and new directions. *J Behav Med* 2008;31:259–79. <https://doi.org/10.1007/s10865-008-9154-7>.
- [99] Lumley MA, Cohen JL, Borszcz GS, Cano A, Radcliffe AM, Porter LS, et al. Pain and emotion: a biopsychosocial review of recent research. *J Clin Psychol* 2011;67:942–68. <https://doi.org/10.1002/jclp.20816>.
- [100] Mayne TJ, Ambrose TK. Research review on anger in psychotherapy. *J Clin Psychol.* 1999 Mar;55(3):353-63. doi: 10.1002/(sici)1097-4679(199903)55:3<353::aid-jclp7>3.0.co;2-b.
- [101] Sifneos PE. The prevalence of 'alexithymic' characteristics in psychosomatic patients. *Psychother Psychosom.* 1973;22(2):255-62. doi: 10.1159/000286529.
- [102] Sifneos PE. Affect, Emotional Conflict, and Deficit: An Overview. *Psychother Psychosom* 1991;56:116–22. <https://doi.org/10.1159/000288543>.
- [103] Sifneos PE. Problems of psychotherapy of patients with alexithymic characteristics and physical disease. *Psychother Psychosom.* 1975;26(2):65-70. doi: 10.1159/000286912.
- [104] Bagby RM, Parker JDA, Taylor GJ. The twenty-item Toronto Alexithymia scale—I. Item selection and cross-validation of the factor structure. *Journal of Psychosomatic Research* 1994;38:23–32. [https://doi.org/10.1016/0022-3999\(94\)90005-1](https://doi.org/10.1016/0022-3999(94)90005-1).
- [105] Bagby RM, Taylor GJ, Parker JDA. The twenty-item Toronto Alexithymia scale—II. Convergent, discriminant, and concurrent validity. *Journal of Psychosomatic Research* 1994;38:33–40. [https://doi.org/10.1016/0022-3999\(94\)90006-X](https://doi.org/10.1016/0022-3999(94)90006-X).
- [106] Lumley MA, Neely LC, Burger AJ. The Assessment of Alexithymia in Medical Settings: Implications for Understanding and Treating Health Problems. *Journal of Personality Assessment* 2007;89:230–46. <https://doi.org/10.1080/00223890701629698>.
- [107] Lanzara R, Conti C, Camelio M, Cannizzaro P, Lalli V, Bellomo RG, et al. Alexithymia and Somatization in Chronic Pain Patients: A Sequential Mediation Model. *Front Psychol* 2020;11:545881. <https://doi.org/10.3389/fpsyg.2020.545881>.
- [108] Aaron RV, Fisher EA, de la Vega R, Lumley MA, Palermo TM. Alexithymia in individuals with chronic pain and its relation to pain intensity, physical interference, depression, and anxiety: a systematic review and meta-analysis. *Pain* 2019;160:994–1006. <https://doi.org/10.1097/j.pain.0000000000001487>.
- [109] Aaron RV, Finan PH, Wegener ST, Keefe FJ, Lumley MA. Emotion regulation as a transdiagnostic factor underlying co-occurring chronic pain and problematic opioid use. *American Psychologist* 2020;75:796–810. <https://doi.org/10.1037/amp0000678>.
- [110] Killingmo, B. Conflict and deficit: implications for technique. *The International journal of psychoanalysis.* 1989;70:65–79.
- [111] Lumley MA, Krohner S, Marshall LM, Kitts TC, Schubiner H, Yarns BC. Emotional awareness and other emotional processes: implications for the assessment and treatment of chronic pain. *Pain Management* 2021;11:325–32. <https://doi.org/10.2217/pmt-2020-0081>.
- [112] Krohner S, Yamin JB, Ziadni MS, Carty McIntosh JN, Schubiner H, Lumley MA. Emotional Awareness and Expression Interview: Examining Interview Content and Patient Experiences

- in Two Medical Samples. *J Clin Psychol Med Settings* 2022. <https://doi.org/10.1007/s10880-022-09913-5>.
- [113] Baker R, Thomas S, Thomas PW, Owens M. Development of an emotional processing scale. *Journal of Psychosomatic Research* 2007;62:167–78. <https://doi.org/10.1016/j.jpsychores.2006.09.005>.
- [114] Baker R, Thomas S, Thomas PW, Gower P, Santonastaso M, Whittlesea A. The Emotional Processing Scale: Scale refinement and abridgement (EPS-25). *Journal of Psychosomatic Research* 2010;68:83–8. <https://doi.org/10.1016/j.jpsychores.2009.07.007>.
- [115] Baker, R. Emotional processing - healing through feeling. Oxford: Lion Hudson plc; 2007.
- [116] Gay M-C, Baker R, Vrignaud P, Thomas P, Heinzlef O, Haag P, et al. Cross-cultural validation of a French version of the Emotional Processing Scale (EPS-25). *European Review of Applied Psychology* 2019;69:91–9. <https://doi.org/10.1016/j.erap.2019.05.002>.
- [117] Freud, A. *The Ego and the Mechanisms of Defence*. London: Routledge; 1966.
- [118] Taerk G, Gnam W. A psychodynamic view of the chronic fatigue syndrome. *General Hospital Psychiatry* 1994;16:319–25. [https://doi.org/10.1016/0163-8343\(94\)90018-3](https://doi.org/10.1016/0163-8343(94)90018-3).
- [119] Phillips K, Clauw DJ. Central pain mechanisms in chronic pain states – Maybe it is all in their head. *Best Practice & Research Clinical Rheumatology* 2011;25:141–54. <https://doi.org/10.1016/j.berh.2011.02.005>.
- [120] Fava GA, Cosci F, Sonino N. *Current Psychosomatic Practice*. *Psychother Psychosom* 2017;86:13–30. <https://doi.org/10.1159/000448856>.
- [121] Persoons P, Oudenhove LV. Inducing Somatic Symptoms in Functional Syndrome Patients: Effects of Manipulating State Negative Affect. *Psychosomatic Medicine* 2017;79:8.
- [122] Okur Güney ZE, Sattel H, Witthöft M, Henningsen P. Emotion regulation in patients with somatic symptom and related disorders: A systematic review. *PLoS ONE* 2019;14:e0217277. <https://doi.org/10.1371/journal.pone.0217277>.
- [123] Benussi A, Premi E, Cantoni V, Compostella S, Magni E, Gilberti N, et al. Cortical Inhibitory Imbalance in Functional Paralysis. *Front Hum Neurosci* 2020;14:153. <https://doi.org/10.3389/fnhum.2020.00153>.
- [124] Red. Edbacken & Vernmark. *Digital psykologi - forskning och klinisk tillämpning*. Lund: Studentlitteratur; 2021.
- [125] Johansson R, Frederick RJ, Andersson G. Using the Internet to Provide Psychodynamic Psychotherapy. *Psychodynamic Psychiatry* 2013;41:513–40. <https://doi.org/10.1521/pdps.2013.41.4.513>.
- [126] Simon N, Robertson L, Lewis C, Roberts NP, Bethell A, Dawson S, et al. Internet-based cognitive and behavioural therapies for post-traumatic stress disorder (PTSD) in adults. *Cochrane Database of Systematic Reviews* 2021;2021. <https://doi.org/10.1002/14651858.CD011710.pub3>.
- [127] Karyotaki E, Efthimiou O, Miguel C, BERPohl FM genannt, Furukawa TA, Cuijpers P, et al. Internet-Based Cognitive Behavioral Therapy for Depression: A Systematic Review and Individual Patient Data Network Meta-analysis. *JAMA Psychiatry* 2021;78:361. <https://doi.org/10.1001/jamapsychiatry.2020.4364>.
- [128] Olthuis JV, Watt MC, Bailey K, Hayden JA, Stewart SH. Therapist-supported Internet cognitive behavioural therapy for anxiety disorders in adults. *Cochrane Database of Systematic Reviews* 2016;2016. <https://doi.org/10.1002/14651858.CD011565.pub2>.
- [129] Diefenbach GJ, Wootton BM, Bragdon LB, Moshier SJ, Tolin DF. Treatment Outcome and Predictors of Internet Guided Self-Help for Obsessive-Compulsive Disorder. *Behavior Therapy* 2015;46:764–74. <https://doi.org/10.1016/j.beth.2015.06.001>.
- [130] Ebert DD, Lehr D, Heber E, Riper H, Cuijpers P, Berking M. Internet- and mobile-based stress management for employees with adherence-focused guidance: efficacy and mechanism of change. *Scand J Work Environ Health* 2016;42:382–94. <https://doi.org/10.5271/sjweh.3573>.
- [131] van Beugen S, Ferwerda M, Hoeve D, Rovers MM, Spillekom-van Koulil S, van Middendorp H, et al. Internet-Based Cognitive Behavioral Therapy for Patients With Chronic Somatic Conditions: A Meta-Analytic Review. *J Med Internet Res* 2014;16:e88. <https://doi.org/10.2196/jmir.2777>.

- [132] Mehta S, Peynenburg VA, Hadjistavropoulos HD. Internet-delivered cognitive behaviour therapy for chronic health conditions: a systematic review and meta-analysis. *J Behav Med* 2019;42:169–87. <https://doi.org/10.1007/s10865-018-9984-x>.
- [133] Cuijpers P, Donker T, van Straten A, Li J, Andersson G. Is guided self-help as effective as face-to-face psychotherapy for depression and anxiety disorders? A systematic review and meta-analysis of comparative outcome studies. *Psychol Med* 2010;40:1943–57. <https://doi.org/10.1017/S0033291710000772>.
- [134] Carlbring P, Andersson G, Cuijpers P, Riper H, Hedman-Lagerlöf E. Internet-based vs. face-to-face cognitive behavior therapy for psychiatric and somatic disorders: an updated systematic review and meta-analysis. *Cognitive Behaviour Therapy* 2018;47:1–18. <https://doi.org/10.1080/16506073.2017.1401115>.
- [135] Hedman-Lagerlöf M, Andersson E, Hedman-Lagerlöf E, Wicksell RK, Flink I, Ljótsson B. Approach as a key for success: Reduced avoidance behaviour mediates the effect of exposure therapy for fibromyalgia. *Behaviour Research and Therapy* 2019;122:103478. <https://doi.org/10.1016/j.brat.2019.103478>.
- [136] Hedman E, Hesser H, Andersson E, Axelsson E, Ljótsson B. The mediating effect of mindful non-reactivity in exposure-based cognitive behavior therapy for severe health anxiety. *Journal of Anxiety Disorders* 2017;50:15–22. <https://doi.org/10.1016/j.janxdis.2017.04.007>.
- [137] Ljótsson B, Hesser H, Andersson E, Lackner JM, El Alaoui S, Falk L, et al. Provoking symptoms to relieve symptoms: A randomized controlled dismantling study of exposure therapy in irritable bowel syndrome. *Behaviour Research and Therapy* 2014;55:27–39. <https://doi.org/10.1016/j.brat.2014.01.007>.
- [138] Lindegaard T, Berg M, Andersson G. Efficacy of Internet-Delivered Psychodynamic Therapy: Systematic Review and Meta-Analysis. *Psychodynamic Psychiatry* 2020;48:437–54. <https://doi.org/10.1521/pdps.2020.48.4.437>.
- [139] Lindqvist K, Mechler J, Carlbring P, Lillengren P, Falkenström F, Andersson G, et al. Affect-Focused Psychodynamic Internet-Based Therapy for Adolescent Depression: Randomized Controlled Trial. *J Med Internet Res* 2020;22:e18047. <https://doi.org/10.2196/18047>.
- [140] Mechler J, Lindqvist K, Carlbring P, Topooco N, Falkenström F, Lillengren P, et al. Therapist-guided internet-based psychodynamic therapy versus cognitive behavioural therapy for adolescent depression in Sweden: a randomised, clinical, non-inferiority trial. *The Lancet Digital Health* 2022;4:e594–603. [https://doi.org/10.1016/S2589-7500\(22\)00095-4](https://doi.org/10.1016/S2589-7500(22)00095-4).
- [141] Ahlquist LR, Yarns BC. Eliciting emotional expressions in psychodynamic psychotherapies using telehealth: a clinical review and single case study using emotional awareness and expression therapy. *Psychoanalytic Psychotherapy* 2022:1–17. <https://doi.org/10.1080/02668734.2022.2037691>.
- [142] Cohen, J. A power primer. *Psychological Bulletin* 1992;112:155–9.
- [143] Preacher KJ, Hayes AF. Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behav Res Methods* 2008;40(3):879–91. <https://doi.org/10.3758/BRM.40.3.879>.
- [144] Kroenke K, Spitzer RL, Williams JBW. The PHQ-15: Validity of a New Measure for Evaluating the Severity of Somatic Symptoms. *Psychosomatic Medicine* 2002;64:258–66. <https://doi.org/10.1097/00006842-200203000-00008>.
- [145] Kroenke K, Spitzer RL, Williams JBW, Löwe B. The Patient Health Questionnaire Somatic, Anxiety, and Depressive Symptom Scales: a systematic review. *General Hospital Psychiatry* 2010;32:345–59. <https://doi.org/10.1016/j.genhosppsych.2010.03.006>.
- [146] Laferton JAC, Stenzel NM, Rief W, Klaus K, Brähler E, Mewes R. Screening for DSM-5 Somatic Symptom Disorder: Diagnostic Accuracy of Self-Report Measures Within a Population Sample. *Psychosom Med* 2017;79:974–81. <https://doi.org/10.1097/PSY.0000000000000530>.
- [147] Häuser W, Brähler E, Wolfe F, Henningsen P. Patient Health Questionnaire 15 as a generic measure of severity in fibromyalgia syndrome: Surveys with patients of three different settings. *Journal of Psychosomatic Research* 2014;76:307–11. <https://doi.org/10.1016/j.jpsychores.2014.01.009>.

- [148] Nordin S, Palmquist E, Nordin M. Psychometric evaluation and normative data for a Swedish version of the Patient Health Questionnaire 15-Item Somatic Symptom Severity Scale: Health and Disability. *Scandinavian Journal of Psychology* 2013;54:112–7. <https://doi.org/10.1111/sjop.12029>.
- [149] Kroenke K, Messina N 3rd, Benattia I, Graepel J, Musgnung J, Venlafaxine extended release in the short-term treatment of depressed and anxious primary care patients with multisomatoform disorder. *J Clin Psychiatry*. 2006 Jan;67(1):72-80. doi: 10.4088/jcp.v67n0111.
- [150] Haggarty JM, O'Connor BP, Mozzon JB, Bailey SK. Shared mental healthcare and somatization: changes in patient symptoms and disability. *Prim Health Care Res Dev* 2016;17:277–86. <https://doi.org/10.1017/S1463423615000420>.
- [151] Baker R, Thomas P, Thomas S, Santonastaso, M. & Corrigan, E. Emotional Processing Scale. Manual. Hogrefe Oxford; 2015.
- [152] Baker R, Owens M, Thomas S, Whittlesea A, Abbey G, Gower P, et al. Does CBT Facilitate Emotional Processing? *Behav Cogn Psychother* 2012;40:19–37. <https://doi.org/10.1017/S1352465810000895>.
- [153] Williams IA, Howlett S, Levita L, Reuber M. Changes in Emotion Processing following Brief Augmented Psychodynamic Interpersonal Therapy for Functional Neurological Symptoms. *Behav Cogn Psychother* 2018;46:350–66. <https://doi.org/10.1017/S1352465817000807>.
- [154] Axelsson E, Andersson E, Ljótsson B, Wallhed Finn D, Hedman E. The health preoccupation diagnostic interview: inter-rater reliability of a structured interview for diagnostic assessment of DSM-5 somatic symptom disorder and illness anxiety disorder. *Cognitive Behaviour Therapy* 2016;45:259–69. <https://doi.org/10.1080/16506073.2016.1161663>.
- [155] Sheehan DV, Lecrubier Y, Sheehan KH, Amorim P, Janavs J, Weiller E, et al. The Mini-International Neuropsychiatric Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *J Clin Psychiatry*. 1998;59 Suppl 20:22-33;quiz 34-57.
- [156] Schubiner, H. & Betzold, M. *Unlearn your pain*. Detroit: Mind Body publishing; 2010.
- [157] Ek J, Widlund R-M, Maroti D & Johansson, R. *Fri från smärta - känslofokuserad terapi vid kroppsliga besvär*. Stockholm: Borells förlag; 2022.
- [158] Maroti D, Hallberg H, Lindqvist K, Mechler J. Using psychodynamic principles in guided internet-delivered therapy (IPDT). *Psychoanalytic Psychotherapy* 2022:1–21. <https://doi.org/10.1080/02668734.2022.2124441>.
- [159] World Medical Association Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects. *JAMA* 2013;310:2191. <https://doi.org/10.1001/jama.2013.281053>.
- [160] Holmes S. Methodological and ethical considerations in designing an Internet study of quality of life: A discussion paper. *International Journal of Nursing Studies* 2009;46:394–405. <https://doi.org/10.1016/j.ijnurstu.2008.08.004>.
- [161] Yoon H, Jang Y, Vaughan PW, Garcia M. Older Adults' Internet Use for Health Information: Digital Divide by Race/Ethnicity and Socioeconomic Status. *J Appl Gerontol*. 2020 Jan;39(1):105-110. doi: 10.1177/0733464818770772.
- [162] Dantoft TM, Nordin S, Andersson L, Petersen MW, Skovbjerg S, Jørgensen T. Multiple chemical sensitivity described in the Danish general population: Cohort characteristics and the importance of screening for functional somatic syndrome comorbidity—The DanFunD study. *PLoS ONE* 2021;16:e0246461. <https://doi.org/10.1371/journal.pone.0246461>.
- [163] Creed F. Review article: the incidence and risk factors for irritable bowel syndrome in population-based studies. *Aliment Pharmacol Ther* 2019;50:507–16. <https://doi.org/10.1111/apt.15396>.
- [164] Riggare, S. Frågor ang MBS-studien. [Question regarding the MBS-Study]. Email: 20190818.
- [165] Peters W, Rice S, Cohen J, Murray L, Schley C, Alvarez-Jimenez M, et al. Trauma-focused cognitive-behavioral therapy (TF-CBT) for interpersonal trauma in transitional-aged youth. *Psychological Trauma: Theory, Research, Practice, and Policy* 2021;13:313–21. <https://doi.org/10.1037/tra0001016>.

- [166] Stroebe M, Stroebe W, Schut H. Bereavement research: methodological issues and ethical concerns. *Palliat Med* 2003;17:235–40. <https://doi.org/10.1191/0269216303pm768rr>.
- [167] Rozental A, Magnusson K, Boettcher J, Andersson G, Carlbring P. For better or worse: An individual patient data meta-analysis of deterioration among participants receiving Internet-based cognitive behavior therapy. *Journal of Consulting and Clinical Psychology* 2017;85:160–77. <https://doi.org/10.1037/ccp0000158>.
- [168] Maroti D, Johansson R. Is Cognitive Change Necessary to Alleviate Symptoms in Patients With Functional Somatic Syndrome? *Front Psychiatry* 2021;12:781083. <https://doi.org/10.3389/fpsy.2021.781083>.
- [169] Holsting AF, Pedersen HF, Rask MT, Frostholm L, Schröder A. Is psychotherapy for functional somatic syndromes harmful? A mixed methods study on negative effects. *Journal of Psychosomatic Research* 2017;98:113–21. <https://doi.org/10.1016/j.jpsychores.2017.05.010>.
- [170] Vugts MAP, Joosen MCW, van der Geer JE, Zedlitz AMEE, Vrijhoef HJM. The effectiveness of various computer-based interventions for patients with chronic pain or functional somatic syndromes: A systematic review and meta-analysis. *PLoS ONE* 2018;13:e0196467. <https://doi.org/10.1371/journal.pone.0196467>.
- [171] Sarter L, Heider J, Kirchner L, Schenkel S, Witthöft M, Rief W, et al. Cognitive and emotional variables predicting treatment outcome of cognitive behavior therapies for patients with medically unexplained symptoms: A meta-analysis. *Journal of Psychosomatic Research* 2021;146:110486. <https://doi.org/10.1016/j.jpsychores.2021.110486>.
- [172] Fernandez E, Salem D, Swift JK, Ramtahal N. Meta-analysis of dropout from cognitive behavioral therapy: Magnitude, timing, and moderators. *Journal of Consulting and Clinical Psychology* 2015;83:1108–22. <https://doi.org/10.1037/ccp0000044>.
- [173] Patterson B, Boyle MH, Kivlenieks M, Van Ameringen M. The use of waitlists as control conditions in anxiety disorders research. *Journal of Psychiatric Research* 2016;83:112–20. <https://doi.org/10.1016/j.jpsychires.2016.08.015>.
- [174] Vindegaard N, Benros ME. COVID-19 pandemic and mental health consequences: Systematic review of the current evidence. *Brain, Behavior, and Immunity* 2020;89:531–42. <https://doi.org/10.1016/j.bbi.2020.05.048>.
- [175] Xiong J, Lipsitz O, Nasri F, Lui LMW, Gill H, Phan L, et al. Impact of COVID-19 pandemic on mental health in the general population: A systematic review. *Journal of Affective Disorders* 2020;277:55–64. <https://doi.org/10.1016/j.jad.2020.08.001>.
- [176] Andrade C. The Ceiling Effect, the Floor Effect, and the Importance of Active and Placebo Control Arms in Randomized Controlled Trials of an Investigational Drug. *Indian Journal of Psychological Medicine* 2021;43:360–1. <https://doi.org/10.1177/02537176211021280>.
- [177] Zettle RD. Treatment Manuals, Single-Subject Designs, and Evidence-Based Practice: A Clinical Behavior Analytic Perspective. *Psychol Rec* 2020;70:649–58. <https://doi.org/10.1007/s40732-020-00394-2>.
- [178] Beutel ME, Scheurich V, Knebel A, Michal M, Wiltink J, Graf-Morgenstern M, et al. Implementing Panic-Focused Psychodynamic Psychotherapy into Clinical Practice. *Can J Psychiatry* 2013;58:326–34. <https://doi.org/10.1177/070674371305800604>.
- [179] Bellomo TR, Schrepf A, Kruger GH, Lumley MA, Schubiner H, Clauw DJ, et al. Pressure Pain Tolerance Predicts the Success of Emotional Awareness and Expression Therapy in Patients With Fibromyalgia. *The Clinical Journal of Pain* 2020;36:562–6. <https://doi.org/10.1097/AJP.0000000000000829>.
- [180] Vlaeyen JWS, Crombez G, Linton SJ. The fear-avoidance model of pain. *Pain* 2016;157:1588–9. <https://doi.org/10.1097/j.pain.0000000000000574>.
- [181] Gentili, C. Digital Acceptance and Commitment Therapy for Adults with Chronic Pain. [Dissertation]. Stockholm Karolinska Institutet. 2022.
- [182] Fink, P. & Rosendal, M. Functional Disorders & Medically Unexplained Symptoms - Assessment & treatment. Aarhus: Aarhus University Press; 2015.
- [183] Windgassen S, Moss-Morris R, Chilcot J, Sibelli A, Goldsmith K, Chalder T. The journey between brain and gut: A systematic review of psychological mechanisms of treatment effect in irritable bowel syndrome. *Br J Health Psychol* 2017;22:701–36. <https://doi.org/10.1111/bjhp.12250>.

- [184] Novakova B, Howlett S, Baker R, Reuber M. Emotion processing and psychogenic non-epileptic seizures: A cross-sectional comparison of patients and healthy controls. *Seizure* 2015;29:4–10. <https://doi.org/10.1016/j.seizure.2015.03.007>.
- [185] Esteves JE, Wheatley L, Mayall C, Abbey H. Emotional processing and its relationship to chronic low back pain: Results from a case-control study. *Manual Therapy* 2013;18:541–6. <https://doi.org/10.1016/j.math.2013.05.008>.
- [186] Sibelli A, Chalder T, Everitt H, Chilcot J, Moss-Morris R. Positive and negative affect mediate the bidirectional relationship between emotional processing and symptom severity and impact in irritable bowel syndrome. *Journal of Psychosomatic Research* 2018;105:1–13. <https://doi.org/10.1016/j.jpsychores.2017.11.016>.
- [187] Chung MC, Chen ZS. Child Abuse and Psychiatric Co-morbidity Among Chinese Adolescents: Emotional Processing as Mediator and PTSD from Past Trauma as Moderator. *Child Psychiatry Hum Dev* 2017;48:610–8. <https://doi.org/10.1007/s10578-016-0687-7>.
- [188] Falahatdoost M, Dolatshahi B, Pourshahbaz A, Dehghani M, Yalguzaghaji M & Mohammadi Z. Modeling the relationship between attachment styles and somatic symptoms with the mediating role of emotional processing. *J Educ Health Promot n.d.;2020; 9: 157*. https://doi.org/10.4103/jehp.jehp_102_20.
- [189] Peluso, P & Freund, R. Therapist and client emotional expression and psychotherapy outcomes: A meta-analysis. *Psychotherapy: Theory, Research and Practice* 2018;55:461–71.
- [190] Keefe JR, Huque ZM, DeRubeis RJ, Barber JP, Milrod BL, Chambless DL. In-session emotional expression predicts symptomatic and panic-specific reflective functioning improvements in panic-focused psychodynamic psychotherapy. *Psychotherapy* 2019;56:514–25. <https://doi.org/10.1037/pst0000215>.
- [191] Gupta MA. Review of somatic symptoms in post-traumatic stress disorder. *International Review of Psychiatry* 2013;25:86–99. <https://doi.org/10.3109/09540261.2012.736367>.
- [192] Kharamin S, Shokraeezadeh AA, Shirazi YG, Malekzadeh M. Psychometric Properties of Iranian Version of Emotional Processing Scale. *Open Access Maced J Med Sci* 2021;9:217–24. <https://doi.org/10.3889/oamjms.2021.5902>.
- [193] Lauriola M, Donati MA, Trentini C, Tomai M, Pontone S, Baker R. The Structure of the Emotional Processing Scale (EPS-25): An Exploratory Structural Equation Modeling Analysis Using Medical and Community Samples. *European Journal of Psychological Assessment* 2021:1–10. <https://doi.org/10.1027/1015-5759/a000632>.
- [194] Maroti D, Axelsson E, Ljótsson B, Andersson G, Lumley MA, Johansson R. Psychometric properties of the emotional processing scale in individuals with psychiatric symptoms and the development of a brief 15-item version. *Sci Rep* 2022;12:10456. <https://doi.org/10.1038/s41598-022-14712-x>.
- [195] Joustra ML, Janssens KAM, Schenk HM, Rosmalen JGM. The four week time frame for somatic symptom questionnaires reflects subjective symptom burden best. *Journal of Psychosomatic Research* 2018;104:16–21. <https://doi.org/10.1016/j.jpsychores.2017.11.006>.
- [196] Forman EM, Chapman JE, Herbert JD, Goetter EM, Yuen EK, Moitra E. Using Session-by-Session Measurement to Compare Mechanisms of Action for Acceptance and Commitment Therapy and Cognitive Therapy. *Behavior Therapy* 2012;43:341–54. <https://doi.org/10.1016/j.beth.2011.07.004>.
- [197] Kazdin AE. Mediators and Mechanisms of Change in Psychotherapy Research. *Annu Rev Clin Psychol* 2007;3:1–27. <https://doi.org/10.1146/annurev.clinpsy.3.022806.091432>.
- [198] Hennemann S, Böhme K, Kleinstäuber M, Baumeister H, Kuchler A-M, Ebert DD, et al. Internet-based CBT for somatic symptom distress (iSOMA) in emerging adults: A randomized controlled trial. *Journal of Consulting and Clinical Psychology* 2022;90:353–65. <https://doi.org/10.1037/ccp0000707>.
- [199] den Boer C, Dries L, Terluin B, van der Wouden JC, Blankenstein AH, van Wilgen CP, et al. Central sensitization in chronic pain and medically unexplained symptom research: A systematic review of definitions, operationalizations and measurement instruments. *Journal of Psychosomatic Research* 2019;117:32–40.
- [200] Van Den Eede F, van der Feltz-Cornelis C. The Need to Distinguish between Bodily Distress Disorder and Somatic Symptom Disorder. *Psychother Psychosom* 2018;87:234–5. <https://doi.org/10.1159/000490731>.

- [201] Sandell R, Svensson M, Nilsson T, Johansson H, Viborg G, Perrin S. The POSE study - panic control treatment versus panic-focused psychodynamic psychotherapy under randomized and self-selection conditions: study protocol for a randomized controlled trial. *Trials* 2015;16:130. <https://doi.org/10.1186/s13063-015-0656-7>.
- [202] Bransfield, Friedman. Differentiating Psychosomatic, Somatopsychic, Multisystem Illnesses, and Medical Uncertainty. *Healthcare* 2019;7:114. <https://doi.org/10.3390/healthcare7040114>.
- [203] Hooper M. Myalgic encephalomyelitis: a review with emphasis on key findings in biomedical research. *Journal of Clinical Pathology* 2006;60:466–71. <https://doi.org/10.1136/jcp.2006.042408>.
- [204] Folketinget. Tv fra Folketinget [Internet]. 2018. Available from: <https://www.ft.dk/aktuelt/webtv/video/20181/salen/71.aspx#pv>