Functional Impairment and Somatoform Disorders

The relationship between Somatisation Disorder, Pain Disorder and Undifferentiated Somatoform Disorder, abuse, symptom-report and functional impairment in a severe psychosomatic Somatoform population at Eikenboom, centre for psychosomatic medicine

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Preface

The present study is part of my graduation program for the Master of Clinical and Health Psychology at the University of Utrecht. By conducting my study at Eikenboom, centre for psychosomatic medicine, I had the opportunity to examine relationships between Somatisation Disorder, Pain Disorder, Undifferentiated Somatoform Disorder and functional impairment, abuse and functional impairment, and symptom-report and functional impairment in a severe somatoform population. I used the SCID, SF-36, SCL-90 and the VBE and applied parametric Univariate Analyses of Variance, Multivariate Analyses of Variance, non-parametric Kruskal-Wallis tests and Mann-Whitney *u* tests to examine these relationships. By doing such, I had the possibility to contribute more empirical evidence about the mechanisms involved in functional impairment in a severe somatoform population. My goal in the present study was to become acquainted with a severe somatoform population and their disabilities. I have gained invaluable experience in clinical practice through implementing the Adult Attachment Interview and the Thematic Apperception Test. Gaining insight in this population's (psycho)pathology was absolutely fascinating. I am pleased with the end result.

My extensive gratitude goes out to all who have helped me and have supported me during this process. I would like to especially thank my supervisor Prof. Dr. M.J.M. van Son from the department of Clinical and Health Psychology at the University of Utrecht. His enlightening perspectives on certain issues, and his support and recommendations have been very helpful. Also, I would like to thank my supervisor Drs. J. Koelen from Eikenboom, centre for psychosomatic medicine, for his contributing knowledge about the somatoform population. I would like to thank Drs. L. Veselka, clinical psychologist and psychotherapist at Eikenboom, for giving me the opportunity to contribute to her promotion research. I would also like to thank my beloved friends and family for their support during this process. In particular my mom, who made it possible for me to achieve my academic ambitions. A special word of gratitude is for A. Sivarajah, my research partner and support system in heavier times. She ensured that my time at Eikenboom was meaningful and very enjoyable. Finally I would like to thank F. Cornelissen, L. Prins, D. van Westing and M.J. van de Berg for their advice and for their willingness to teach me the ropes at Eikenboom; I sincerely enjoy working with you and learning from you.

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Abstract

Objective: The purpose of this study was to examine certain precipitating, predisposing and perpetuating factors in functional impairments in a Somatoform population. A special emphasize was made on Somatisation Disorder, abuse and symptom-report, as it is expected that these factors have important contributions for functional impairment.
Methods: 42 patients (age between 21-59) of inpatient somatoform psychiatric hospital 'Eikenboom' in the Netherlands completed the following questionnaires: SF-36, SCL-90, VBE. A SCID was administered to determine psychiatric diagnosis. 8 patients were diagnosed with a Somatisation Disorder, 16 with a Pain Disorder, 10 with an Undifferentiated Somatoform Disorder.
Results: Somatisation Disorder showed in comparison with Pain Disorder and Undifferentiated Somatoform Disorder significantly more impairment in Social Functioning. Somatisation Disorder showed in comparison with Pain Disorder significantly more impairment in Vitality. Somatisation Disordered patients' Vitality was influenced by their symptom-report. Physical impairment was further equal across groups. Experiencing a combination of sexual, physical and sexual abuse was associated with significantly worse General Health when compared to emotional abuse. There were no other significant differences between different types of abuse in mental and physical impairment.
Conclusion: The results encourage further examination of the role of maladaptive illness behaviors in functional impairment in somatoform patients, as this study offered some evidence for this association. While the current study is one of an explorative character, more research is necessary to determine more specific risk factors associated with functional impairment in a Somatoform population.
Keywords: Somatisation Disorder, Pain Disorder, Undifferentiated Somatoform Disorder, functional impairment, abuse, symptom-report, significant differences.

1. Introduction

Somatoform Disorders are among the most prevalent psychiatric disorders in general practice. A study by de Waal et al., (2004) in The Netherlands shows a general practice prevalence rate of 16.1%, up to 21.9% when severity of impairment is included as a criterion. Studies (Barsky et al., 2005; Fink et al., 1999; Waal et al., 2004; Leikness et al., 2007) show varying prevalence rates across countries, depending on criteria used for classification. This lack of similarity concerning classification is in part attributable to the complex nature of Somatoform Disorders. Consequently, Somatoform Disorders are often not well understood in medical nor in psychopathological terms. Furthermore, the Somatoform Disorders receive less attention in general, opposed to anxiety and depression (de Waal et al., 2004). However, due to significant suffering from illness related symptoms and functional impairments, it needs to be recognized that greater attention for this illness is necessary. Hiller et al., (1997) show that the functional impairments of patients with multiple psychosomatic complaints may even outweigh those of schizophrenia. Attention is mostly focused on the diagnosis instead of the level of impairment (Bass et al., 2001). Diagnosing a Somatoform Disorder turns out to be challenging for physicians, as it is often a long process of exclusion (Servan-Schreiber et al. 2005). Moreover, treatment for these patients may be complex. According to physicians, multisomatoform disordered patients are described as most difficult, for reasons like elevated unexplainable symptom reports (Hahn et al. 1996)[1]. This difficult behaviour induces frustration in caregivers. Somatoform patients have a tendency to amplify symptoms and attribute symptoms to somatic causes (Duddu et al., 2003). These patients have difficulty in tolerating the idea that their disorder may be psychological in nature. It poses an extra problem as a multifactorial approach is necessary to explain etiology of Somatoform Disorders including factors like somatisation, dissociation and trauma (Loewenstein, chapter 5, from Kluft 1990; Hexel et al., 2004; Brown et al., 2005) . Research has shown psychotrauma to be involved in developing dissociation and somatisation (Fonagy and Target, 2006; Roelofs and Spinhoven, 2007). For this reason this study is focussed upon the possible interrelation of early psychotrauma, particularly abuse, Somatoform Disorders, or elevated symptom reports, and significant functional impairments[2].

1.1. Definition of Somatoform disorders

The term somatoform derives from the Greek ‘soma’, which means ‘body’, and the somatoform disorders are a broad group of illnesses that have bodily signs and symptoms which cannot be adequately explained by organic findings (Kaplan & Sadock, 2003; de Gucht en Fischler, 2002). It was first introduced by Briquet (1859, in: Kluft, 1990), who recognized that ‘Hysteria’ (Conversion Disorder, DSM-IV-TR, APA, 2000) was strongly associated with psychological distress. Contemporary views point out that somatisation is the manifestation of

[1] Additional reasons associated with difficult patients are total number of: mental disorders, physical symptoms and alcohol abuse/dependence.

[2] The association of traumatic abuse and self-reported symptoms will be discussed later on in this text

psychological difficulty through somatic symptoms (de Gucht en Fischler, 2002). Mentalization is believed to play an important role in developing Somatoform Disorders. Mentalization is the ability to interpret behaviour of oneself and others in terms of underlying psychological states (Fonagy and Target, 1996). Somatoform patients are hypothesized to lack this mental ability to form representations of the self and the body and thus poorly translate physical experiences to mental states like feelings, beliefs, intentions or thoughts (Spaans, 2006).

1.2. Classification of Somatoform Disorders

Since the 17th century René Descartes' axiom "I think, therefore I am" our western dualistic thinking is capsulized, as if the mind and body are two separate entities (Feldman, Feldman & Smith, 1998). Any mind or body 'abnormalities' are separately arranged in respectively the Diagnostic and Statistical Manual of Mental Disorders 4th revision (DSM-IV; 2000, APA) and the International Classifications of Diseases and Related Health Problems 10th revision (ICD-10; 1992, WHO). The DSM-IV (2000, APA) categorizes the following types of Somatoform Disorders: Somatisation disorder, Conversion Disorder, Pain Disorder, Hypochondrias Disorder and Body Dysmorphic Disorder. Neat arrangement of these disorders in classical psychiatric classifications is however defied by research[3] (Feldman et al., 1998). These dualistic arrangements imply a false dichotomy between 'psychological' and 'physical' disease processes (Stuart, 2008). This dichotomy assumes mere psychogenesis of Somatoform Disorders, due to the absence of clear disease pathology. However, Irritable Bowel Syndrome, Proctalgia Fugax, Restless Legs Syndrome and Chronic Lyme disease are disorders that fall in the interface between physical disease and mental disorder. Moreover, somatic illnesses do not always show clear etiology or pathogenesis (Bradfield, 2006; Sharpe 2004). Arranging Somatoform Disorders solely in a psychiatric class, may be too narrow of a classification..

1.3. Treatment of Somatoform Disorders

Assuming that somatic as well as psychological aspects contribute to the development of a somatoform disorder, a multidisciplinary approach might be necessary in order to diagnose and treat Somatoform Disorders (Bradfield, 2006). According to Rief et al., (2008) research "proves that the combination of somatic and psychological methods (interdisciplinary pain management) to be superior to simple medical or psychological treatments in many chronic pain conditions" (Rief et al., 2008, p. 179). Studies have shown the success of biopsychosocial treatment over psychophysical treatment in lower back pain (Guzman et al. 2008). However, several studies showed consistent efficacy of Cognitive Behavioural Therapy (CBT) (from Stuart et al., 2008: Warwick et al., 1996; Greeven et al., 2007; Clark et al., 1998; Linden et al., 2000; Barsky & Ahern., 2004; Speckens et al., 1995; Mcleod et al., 1997; Hellman et al., 1990; Allen et al., 2006; Avia et al., 1996; Bouman & Visser, 1998; Lidbeck, 1997; Kashner et al., 1995; Sumathipala et al., 2000; Mayou et al., 1997). In a review of efficacy-studies of treatment for Somatoform Disorders Kroenke (2007) showed that CBT in different care

[3] For research about the distinction between mind and body, see "Stranger than Fiction", by Feldman, Feldman & Smith (1998).

settings[4] was more effective than numerous other (single) treatment types[5]. Although these studies suggest the superiority of CBT, the following considerations put these results into perspective: First, viewed from a critical perspective on numerous studies, the general population of somatoform patients frequently suffer from comorbid disorders; in particular anxiety and depression are common (Waal et al. 2004). Assuming that particular interventions have an impact on specific disorders, this comorbidity makes it difficult to establish what treatment is affecting which disorder. Moreover only one study in Kroenke et al.'s (2007) review was conducted in an inpatient facility. Inpatient facilities are frequently populated by a severely impaired patient group; pain, paralyses (with dependence on wheelchair), and exhaustion are common (Bühring & Lether, 2000), where outpatient populations may show less severe symptoms and impairments. It is yet unclear whether CBT is sufficiently effective for inpatients with very severe symptoms and impairments. More research is clearly needed in this area.

1.4. The Somatoform Patient

Noyes et al., (in press) performed a review-study in which they investigated commonly suggested proposals from studies for improved conceptualization of the Somatoform Disorders in the DSM-IV (APA, 2000). Maladaptive illness behaviour performed a central role in the proposals. Strong illness belief that remains resilient after a physicians reassurance, inappropriate distorted affect, adopting sick roles (Chaturvedi et al., 2006), overutilization of medical care, somatic attribution style, amplified symptom reports, selective and frequent attention to (affected) body parts (Warwick, 1995), are among prevalent maladaptive behaviour patterns associated with somatoform disorders. Noyes et al., (in press) reconceptualization of Somatoform Disorders emphasize the role of maladaptive illness behaviour and distress over symptoms in functional impairment. This is in contrast to particular patients' belief that physical symptoms cause impairment. Unwittingly the chicken or the egg dilemma arises, where it is questioned whether the maladaptive behaviours cause the symptoms or the symptoms cause the maladaptive behaviour. Without attempting to answer this (philosophical) question, because it would go beyond the scope of this study, the experienced and reported functional impairments are substantial and for this reason they are the main focus of this study.

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[4] Care settings: mental health professionals: psychiatrists, psychologists, behavioural medicine specialists, primary care provider.

[5] Treatment types: antidepressants, psychiatric consultation letter to the primary care physican, training primary care physicians on how to better manage somatising patients, psychotherapy, multicomponent nurse care management intervention, aerobics exercise, writing disclosure, hypnosis, oaradoxical intention, explanatory therapy.

1.5. Functional Impairment and Trauma, Somatoform Disorders, Self Reported Symptoms

Functional Impairment 1.5.1

Functional impairment refers to a person's loss of ability to perform its function. According to the International Classifications of Functioning (ICF: World Health Organisation, 2002). Functional impairments can be understood in terms of the organism, activity or participation. Risk factors of functional impairments may be divided in medical, personal and/or external determinants. One may consider for example an illness, the female sex or the lack of a social support system as a risk factor[6]. According to the ICF model, these factors may work transactional. Functional impairments associated with an illness imply an antecedent, a (behavioural) manifestation and a consequent relationship. The risk factors are considered to form an antecedent role. A person is female, not educated, no daily exercise, and suffers from a pain condition, which manifests itself through symptoms and (maladaptive) behaviour. The consequence is that she is unable to move around freely, engage in social activities or work. Functional impairments can be considered an operational consequence of the severity of both psychological and somatic pathology. They are a concrete assessment that provides insight and clarification of severity of a person's psychological and physical well being (antecedents and manifestation). In addition, functional impairments imply the impact of the pathology on the environment; functionally impaired people may depend heavily on their support system, and are a burden for society as whole, due to high medical costs and productivity losses (Simon, 2003; Hill et al. 2006). One may divide functional impairments in a 'mental' and 'physical' category; both categories may be assessed by SF-36 questionnaire[7]. The SF-36 questionnaire captures all three areas of impairment suggested by the ICF model (organism, activity and participation).

1.5.2. Predisposing Factor of Functional Impairment: Trauma

It may be obvious, as described earlier, how somatoform disorders bring about functional impairment. Moreover, several studies have shown the persistence of functional impairment while disorder specific symptoms are alleviated; this implies that other factors might contribute to functional impairment 'apart' from the psychological disorder (Cloitre et al., 2005). Previous studies have pointed to the etiological significance of trauma. Particularly chronic childhood abuse is associated with impairments (Cloitre et al., 2005). Whether a trauma occurs is dependent on objective characteristics of the situation, the distressing event, and the subjective characteristics of the person, in particular the response. Psychological disorders associated with trauma are Borderline Personality Disorder (BPD), Post Traumatic Stress Disorder (PTSD) or an Acute Stress Disorder (ASD) (DSM-IV-TR: APA, 2000).

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[6] These risk-factors are statistical and do not attempt to explain their causal relationships. For theoretical concepts explaining women's' vulnerability for physical impairment, see K. Kroenke, & R.L. Spitzer, (1998). Gender Differences in the Reporting of Physical and Somatoform Symptoms. *Psychosomatic Medicine, 60*, 150-155.

[7] For a detailed description of the SF-36 questionnaire see chapter 2 of this study.

The current study focuses on physical, sexual, and emotional abuse and trauma and its association with functional impairment, as this type of trauma is common in a somatoform population (Brown et al, 2005; Hexel & Sonneck, 2002; Bühring & lether, 2000)

1.5.2.1. Abuse and physical functioning

According to Hexel & Sonneck (2002) experiencing sexual abuse during childhood leads to significantly more frequent and more intense somatoform symptoms later in life. Briere and Runtz (1988) state that somatisation along with dissociation was most predictive of sexual abuse. It is suggested that through expressing somatic symptoms, patients have found a safe way to describe distress (Walker et al.1992). Nelson (2002) emphasizes the somatic effects by pointing out how early sexual trauma can cause direct harm to specific affected body-parts. In addition, the effects on the still growing brain, the central nervous system, the immune system and the (chronic) state of (hyper) arousal are substantial (Gerritson et al., 1996; Heim et al., 1998; in: Nelson, 2002). When a child suffers violent and repeated abuse, it may be obvious that the effects on these bodily-systems and parts are serious. Nonetheless, physical symptoms stemming from childhood sexual abuse can not be viewed separate from its psychological sequelae, as they are inextricably linked (Fry, 1993). Physical symptoms experienced by adult survivors potentially fall in the interface of somatic and psychological causes. Literature shows great commonality in physical symptoms experienced due to sexual abuse, such as gynaecological problems (Nelson, 2002; Salmon & Calderbank, 1995; Moeller et al., 1993; Draijer, 1988; Arnold et al., 1990), obesity and eating problems (Nelson, 2002; Moeller et al., 1993; Tice et al., 1989; Treuer et al., 2005; Joseph, 2003; Arnold et al., 1990), sleeping disturbances (Moeller et al., 1993; Noll et al., 2006; Abrams et al., 2008; Briere & Runtz, 1988; Nelson, 2002) pain in areas such as back, head, hip/joint, pelvic/groin or stomach (Moeller et al., 1993; Nelson, 2002; Lampe et al., 2000; Salmon & Calderbank, 1995; Finestone et al., 2000), intestinal disturbances (Nelson, 2002; Drossman et al., 1990; Leroi et al., 1995; Arnold et al., 1990), muscle stiffness and tension in jaw, neck and shoulders (Nelson, 2002; Briere and Runtz, 1988). This commonality implies specific physical problems for sexual abuse.

The current study hypothesizes that sexual and physical abuse, will lead to significant more physical functional impairment. Sexual and physical abuse are taken together as these two types often co-occur.

1.5.2.2. Abuse and mental functioning

Grounded in developmental theory and based on developmental research, childhood abuse effects the child his or her emotion regulation and interpersonal skills in a negative way (Cicchetti & White, 1990; Shields & Cicchetti, 1998; Briere, 2002; Pynoos, Steinberg, Ornitz & Goenjian, 1997; van der Kolk, 1996). Cloitre et al. (2005) performed a study in which they measured to what extend emotion regulation and interpersonal problems predicted functional impairment in survivors of childhood abuse. Emotion regulation and interpersonal problems were just as predictive of functional impairment, measured in instrumental and expressive role performance, as was PTSD. A study by Sappington, Phar, Tunstall & Rickert (1997) showed that verbal abuse suffered as a child in it self may lead to an increased risk of abuse in romantic relationships and increased emotional problems later in life. They suggest that verbal

abuse, in terms of associated problems, can be considered just as serious as other types of abuse. Katz & Arias (1999) studied whether psychologically abused women over time showed more depressive symptoms when compared to a healthy control group. They showed that dominance and isolation were significant predictors of depressive symptoms, with a moderating effect of perceived interpersonal control. On the basis of this literature it is to be expected that psychological or emotional abuse leads to significant functional impairment in mental functioning.

1.5.3. Precipitating factor: Somatoform Disorders and Functional Impairment

According to Waal et al. (2004) patients who suffer from somatoform disorders are limited on various important domains of functioning: physical functioning, social functioning, role functioning impaired by physical problems, role functioning impaired by emotional problems, pain and subjective health. Impairment increased substantially in social functioning, role functioning because of emotional problems and subjective health when patients suffer from comorbid disorders (additive anxiety *and/or* depressive disorder). One third of the somatoform patients experienced a comorbid disorder, which imply further functional impairments. The Global Assessment of Functioning (GAF; DSM IV TR: APA, 2000) estimates for somatoform patients lies within the range of 41-50, which indicates severe symptoms or some severe impairments in social, vocational or school functioning. According to the DSM system, this level corresponds to a high level of severity of illness (DSM- IV- TR). Somatisation disorders have been considered to be the most severe type of somatoform disorders. Somatisation disorder defines itself as having: at least four pain complaints, two gastro-intestinal complaints, one sexual and one pseudo neurological complaint. The onset is expected to be before the age of 30 and therefore patients with this disorder often have a long 'medical' history. Bass, Preveler & House (2001) reviewed the prevalence, disability, economic burden and the reasons why they are neglected by psychiatrists. They state that Somatisation Disorder is one of the most severe type of Somatoform Disorders and is associated with gross physical impairment. Bass & Murphy (1991) found a substantial confinement to wheelchairs with regard to Somatisation Disorders in a UK sample. Smith et al. (1986) found physical functioning of Somatisation Disordered patients to be even poorer than physical functioning of patients suffering from chronic organic disease. Cloninger (1994) suggested that social impairment[8] was an important factor in diagnosing somatisation disorder.

Due to its severity it is expected that somatisation disorder will show most functional impairments, across all areas, when compared to conversion disorder, pain disorder, hypochondriac disorder or somatoform disorder 'not otherwise specified' (NAO).

[8] Histrionic personality traits, conversion and dissociative symptoms, sexual and menstrual problems are additional factors to be considered when diagnosing a somatisation disorder.

1.5.4. Perpetuating factors: Symptom- Report

It has previously been described how somatoform patients may act some maladaptive illness behaviours, which focus around certain central themes: (mis)interpreting bodily signs and symptoms, paying constant selective attention to these bodily signs and symptoms, communicating these symptoms (to a large extent) to their personal systems like family and friends and resisting explanations outside the medical field. These maladaptive behaviour patterns implicitly hold a notion of the patient feeling misunderstood and henceforth needing to communicate and emphasize their symptoms. A way of doing such could be by amplifying their symptoms.

An important factor in the current study to take into consideration is that somatoform patients' functional impairments might be inflated due to patients' tendency to amplify symptom reports. Potential inflation can particularly be expected with patients suffering from a somatisation disorder, due to the fact that their diagnosis is, next to the nature of the complaints, dependent on the amount of symptoms they experience and report. In addition, it is likely that somatisation disordered patients' long medical history creates more resistance to change in regard to maladaptive illness behaviours. Patients' are almost identifying themselves by their symptoms; facilitating the way for spiralling mental, social and physical impairment. When compared to other Somatoform Disorders, Somatisation Disordered patients are expected to report more symptoms. It is expected that their increased reports are partially responsible for their higher interpersonal and physical functional impairment[9].

1.6. Aim of the present study

Previous studies have described the functional impairment of Somatoform Disorders as gross, and even outweighing those of other psychiatric disorders, such as schizophrenia.. The aim of the present study is to examine differences between Somatoform Disorders in a severe population, to clarify which Somatoform Disorder suffers most physical and mental functional impairment. Because abuse is common in this population, a special emphasize will be made on the role of abuse in physical and mental functional impairment. Also, due to previous studies suggesting the importance of maladaptive illness behaviour in Somatoform Disorders, the current study will examine whether amplified symptom reports are associated with clients' impairment reports. Finally, by examining between group differences in a somatoform population, physical, sexual, emotional abuse and symptom-report, a framework of respectively precipitating, predisposing and perpetuating factors of Somatoform Disorders is offered.

[9]This study does not attempt to prove a causal relationship of amplified symptom reports leading to thus exaggerated, almost staged, functional impairment.

2. Methods

2.1. Participants

The present study was conducted at Eikenboom, a specialized treatment- and rehabilitation centre for psychosomatic medicine in Zeist, the Netherlands. Eikenboom is a department of Altrecht, an institute for mental health care. Eikenboom is a tertiary referral clinic for patients with a combination of physical, psychological en social problems. Individuals are referred to Eikenboom from all throughout the Netherlands, by specialists, general practitioners, revalidation centres, hospitals, and other specialized centres with patients who experience complex psychosomatic problems and are frequently in need of immediate treatment (Bühring & Lether, 2000). The main aim is to revalidate patients and to best facilitate independence in physical, psychological en social domains (Spaans, 2006).

The participants in the present study are drawn from the population at Eikenboom who were enrolled between 2005 and 2008. All admitted patients follow a fixed procedure and have thus become part of the present study of participants. The participating patients (*N*=42), 36 females and 6 males, joined the standard screening procedure for admission in the clinic in the period from 27-04-2005 to 31-01-2008. The final sample included 36 patients: 6 were excluded, due to diagnoses other then Somatisation Disorder, Pain Disorder or Undifferentiated Somatoform Disorder. These 6 patients consisted of 3 groups of Somatoform Disorders, which numbers were too small to make accurate comparisons with. Mean age of the total sample is 41.03 (Std.dev = 11.95; range 20-59).

2.2. Procedure

Each patient at Eikenboom is expected to participate in an initial assessment, which contains a standard screening procedure[1], including interviews and questionnaires. The aim of the standard screening procedure is to form an indication of the patient's condition, for diagnostic and research purposes. This procedure is supervised by one or two trained psychologists or psychology trainees. All patients receive complete instructions of the screening procedure, and are informed of its purpose. The screening procedure contains (in the following order): the Thematic Apperception Test (TAT; Murray, 1943), the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1996), the Structured Clinical Interviews for DSM-IV Axis I-II (SCID-I; First, Gibbon, Spitzer, & Williams, 1995; SCID-II; First, Gibbon, Spitzer, Williams, & Benjamin, 1997), the Dutch Short form of MMPI (Nederlandse verkorte MMPI; NVM; Luteijn & Kok, 1985), the Neuroticism Extraversion Openness – Personality Inventory Revised (NEO-PI-R; Hoekstra, Ormel, & De Fruyt, 1996), the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986), the Body Image Questionnaire (BIV-20; Clement & Löwe, 1996), the Checklist Individual Strength (CIS-20-R; Vercoulen, Alberts, & Bleijenberg, 1999), the 36-item Short Form Health Survey (SF-36; Van der Zee & Sanderman, 1993), the Somatoform Dissociation Questionnaire (SDQ-20; Nijenhuis, Spinhoven, Van Dyck, Van der Hart, & Vanderlinden, 1996), and the Traumatic Experience questionnaire (Vragenlijst Belastende Ervaringen; VBE; Nijenhuis, Van der Hart, & Vanderlinden, 1999). During this screening process, a psychologist or psychology trainee remains present for supervision and

instruction of the participants. Participants are allowed to ask questions about the questionnaires. Furthermore, participants are allowed to pause if they are hindered by concentration problems or physical complaints. After the standard screening procedure, all participants may take an appointment to get feedback on results of the screening procedure. To avoid outside influences (social desirability effects) personality questionnaires must be completed individually, within Eikenboom,
The screening is followed by the Standard Evaluation Project (STEP), which contains the Symptom Checklist 90 (SCL-90; Derogatis, 1983), the European Quality of Life Instrument (EQ-D5; Kind, 1996), and the Trimbos and iMTA questionnaire on Costs associated with Psychiatric Illnesses (TiC-P; Hakkaart-van Roijen, Van Straten, Donker, & Tiemens, 2002). Supervision of the STEP-questionnaires is not mandatory, and completion is permitted outside the centre.

2.3. Instruments included in this study

2.3.1. The Traumatic Experiences Questionnaire (Vragenlijst Belastende Ervaringen: VBE)

The Traumatic Experiences Questionnaire (TEC) (VBE; Nijenhuis, Van der Hart & Vanderlinden, 1999) was used in this study to establish the individual's traumatic experience(s). This questionnaire exists of 30 items which contains the following subscales: emotional abuse/neglect, sexual abuse and physical abuse. The raw scores of each item are classified into a 5 point scale, which indicates the subjective experience of the event as the patient retrospectively reports it (5 being most severe). The subscale scores can be measured as well as a total score. According to Nijenhuis, Van der Hart & Kruger (2002) the reliability and validity of the VBE are satisfactory in regard to traumatic life events.

2.3.2. Symptom Check List (SCL)-90

The aim the SCL-90 (Derogatis, 1983, in Simpson, Carlson, Beck, & Patten, 2002) is to explicate physical and psychological complaints with the purpose of usage for research, screening or the evaluation of interventions. It represents the patient's general mental health status and contains 90 items which are divided in 8 scales, to know: agoraphobia, anxiety, depression, somatic complaints, insufficiency in thinking and acting, distrust and interpersonal sensitivity, hostility and sleeping problems. It is a self report questionnaire and reliability and validity are satisfactory (Segal et al., 1994).

2.3.3. Structural Clinical Interview for DSM-IV Disorders (SCID)

Structured clinical interviews are currently the standard method of diagnosis in psychiatry studies. The SCID (Spitzer, Williams, Gibbon, & First, 1992, in Simpson et al., 2002) is designed to yield a reliable and valid DSM-IV diagnosis (Williams et al., 1992). In the present study a Dutch version of the SCID was used to asses the Axis I disorder (Gestructureerd Klinisch Interview voor de vaststelling van DSM-IV- As I stoornissen, van Groenestijn, Akkerhuis, Kupka, Schneider, & Nolen, 1997). The interview contains 12 screening questions in order to determine which of the following 10 modules will be offered. Each module represents a psychiatric category within the DSM-IV, to know mood disorders, psychotic

symptoms, psychotic differentiation, mood differentiation, substance use, anxiety disorders, somatoform disorders, eating disorders, adjustment disorders, and factitious disorders. Each psychiatric category is then subdivided into specific disorders appropriate for the category (as established by the DSM-IV). The patient scores on a three point scale, each score indicating the individual suitability in regard to the criterion (1 = "absent/incorrect", 2 = "uncertainty" and 3 = "present/correct").

2.3.4. Short Form Health Survey-36 (SF-36)

The aim of the SF-36 (Ware, 1990) is to explicate physical and mental impairments as a consequence of disease. It is often used to differentiate health benefits produced by a variety of treatments. The taxonomy of the questionnaire has three levels; 36 items, 8 scales (general health, role functioning impaired by physical complaints, bodily pain, physical functioning impaired by health, vitality, social functioning, mental health and role functioning impaired by emotional problems) and 2 summary measures (mental health and physical health). It is a self-report questionnaire and reliability and validity are satisfactory (Tsai, Bayliss, & Ware, 1997).

2.4. Data analysis

2.4.1. Aim

The aim of this study is to examine whether a Somatisation diagnosis, as measured by the SCID, is associated with more functional impairment, as measured by the SF-36. Because abuse, as measured by the VBE, is very common in a Somatoform population, another aim of this study is to examine the role of different types of abuse in functional impairment. Finally, Somatoform patients have a tendency to emphasize their symptoms. The final aim is to examine whether symptom-report, as measured by the SCL-90, influences the functional impairment of the Somatisation Disordered patient.

2.4.2. Statistical analysis

The first research question and hypotheses are examined by the use of multivariate analysis of variance (MANOVA) and Kruskal-Wallis Tests for non-parametric distributions to indicate whether significant differences can be found between Somatisation Disorder, Pain Disorder and Undifferentiated Somatoform Disorder in physical and mental functioning. One-way analysis of variance (ANOVA) Post-Hoc tests and Mann-Whitney *U* tests will be conducted on significant results. The significant alpha level is set at .05 and where it applies, a bonferoni adjusted alpha level will be used. Effect sizes are interpreted by Cohen's standards (1988, pp. 284-7); a table of estimates is presented at the end of this chapter.

Several presumptions of the expected outcome can be made. Patients suffering from Somatisation Disorder are expected to differ significantly from Pain and Undifferentiated Somatoform Disorder in physical functioning. It is presumed that Somatisation Disorder will have significant lower functioning on the scales: general health, bodily pain, role functioning impaired by physical complaints and physical functioning impaired by health when compared to Pain and Undifferentiated Disorder. In addition, patients suffering from Somatisation Disorder are expected to differ significantly from Pain and Undifferentiated Somatoform Disorder in mental functioning. It is presumed that Somatisation Disorder will have significant

lower functioning on the scales: vitality, social functioning, role functioning impaired by emotional problems and mental health when compared to Pain and Undifferentiated Somatoform Disorder. These presumptions are based on Somatisation Disorder being the most severe type of Somatoform Disorders.

Research Question 1: Does Somatisation Disorder differ significantly from Pain and Undifferentiated Somatoform Disorder in physical and mental functioning? More specifically, is Somatisation Disorder significantly associated with lower functioning in general health, bodily pain, role functioning impaired by physical complaints, physical functioning impaired by health, vitality, social functioning, role functioning impaired by emotional problems and mental health?

Hypotheses:

1a. Patients with Somatisation Disorder (SCID) will show significant lower (overall) physical functioning (SF-36) when compared to Pain or Undifferentiated Somatoform Disorder (SCID).

1b. Patients with Somatisation Disorder (SCID) will show significant lower general health when compared to Pain or Undifferentiated Somatoform Disorder (SCID).

1c. Patients with Somatisation Disorder (SCID) will show significant higher (thus lower means on) bodily pain when compared to Pain or Undifferentiated Somatoform Disorder (SCID).

1d. Patients with Somatisation Disorder (SCID) will show significant lower physical functioning impaired by health when compared to Pain or Undifferentiated Somatoform Disorder (SCID).

1e. Patients with Somatisation Disorder (SCID) will show significant lower role functioning impaired by physical complaints when compared to Pain or Undifferentiated Somatoform Disorder (SCID).

1f. Patients with Somatisation Disorder (SCID) will show significant lower (overall) mental functioning (SF-36) when compared to Pain or Undifferentiated Somatoform Disorder (SCID).

1g. Patients with Somatisation Disorder (SCID) will show significant lower mental health when compared to Pain or Undifferentiated Somatoform Disorder (SCID).

1h. Patients with Somatisation Disorder (SCID) will show significant lower vitality when compared to Pain or Undifferentiated Somatoform Disorder (SCID).

1i. Patients with Somatisation Disorder (SCID) will show significant lower role functioning impaired by emotional problems when compared to Pain or Undifferentiated Somatoform Disorder (SCID).

1j. Patients with Somatisation Disorder (SCID) will show significant lower social functioning when compared to Pain or Undifferentiated Somatoform Disorder (SCID).

The second research question and hypotheses are examined by the use of multivariate analysis of variance (MANOVA) and Kruskal-Wallis Tests for non-parametric distributions to indicate whether significant differences can be found between physical, sexual and emotional abuse in physical and mental functioning. One-way analysis of variance (ANOVA) and Post-Hoc tests will be conducted on significant results. The significant alpha level is set at .05 and where it

applies, a bonferoni adjusted alpha level will be used. Effect sizes are interpreted by Cohen's standards (1988, pp. 284-7); a table of estimates is presented at the end of this chapter.

Several presumptions of the expected outcome can be made. Patients who experienced physical and sexual abuse are expected to differ significantly from emotional abuse in physical functioning. It is presumed that physical and sexual abuse will have significant lower functioning on the scales: general health, bodily pain, role functioning impaired by physical complaints and physical functioning impaired by health when compared to emotional abuse. In addition, patients suffering from emotional abuse are expected to differ significantly from physical and sexual abuse in mental functioning. It is presumed that emotional abuse will have significant lower functioning on the scales: vitality, social functioning, role functioning impaired by emotional problems and mental health when compared to physical and sexual abuse. These presumptions are based on several studies who have described the physical consequences of physical and sexual abuse, whether as a direct result of injury or as a way to communicate distress. In addition, literature has also described the mental impairment stemming from emotional abuse. When severity is taken into consideration, the impairments from emotional abuse are suitable for comparison with the impairments stemming from physical and sexual abuse.

Research Question 2: Do sexual and physical abuse differ significantly from emotional abuse in physical and mental functioning? More specifically, are physical and sexual abuse significantly associated with low functioning in general health, bodily pain, role functioning limited by physical complaints and physical functioning limited by health? Is there an association between emotional abuse and worse mental functioning, and if so, is this association significantly different from the association between physical and sexual abuse and mental impairment? Is emotional abuse significantly associated with low functioning in vitality, social functioning, role functioning limited by emotional problems and mental health?
Hypotheses:
2a. Patients whom experienced physical and/or sexual abuse (VBE) will, in comparison with patients whom experienced emotional abuse (VBE), show significantly more impairment in (overall) physical functioning (SF-36).

2b. Patients whom experienced physical and/or sexual abuse (VBE) will, in comparison with patients whom experienced emotional abuse (VBE), show significantly more impairment in general health.

2c. Patients whom experienced physical and/or sexual abuse (VBE) will, in comparison with patients whom experienced emotional abuse (VBE), show significantly more impairment in bodily pain.

2d. Patients whom experienced physical and/or sexual abuse (VBE) will, in comparison with patients whom experienced emotional abuse (VBE), show significantly more impairment in physical functioning limited by health.

2e. Patients whom experienced physical and/or sexual abuse (VBE) will, in comparison with patients whom experienced emotional abuse (VBE), show significantly more impairment in role functioning limited by physical complaints.

2f. Patients whom experienced emotional abuse (VBE) will, in comparison with patients whom experienced physical and/or sexual abuse (VBE) show significantly more impairment in (overall) mental health.

2g. Patients whom experienced emotional abuse (VBE) will, in comparison with patients whom experienced physical and/or sexual abuse (VBE) show significantly more impairment in social functioning.

2h. Patients whom experienced emotional abuse (VBE) will, in comparison with patients whom experienced physical and/or sexual abuse (VBE) show significantly more impairment in vitality.

2i. Patients whom experienced emotional abuse (VBE) will, in comparison with patients whom experienced physical and/or sexual abuse (VBE) show significantly more impairment in role functioning impaired by emotional problems.

2j. Patients whom experienced emotional abuse (VBE) will, in comparison with patients whom experienced physical and/or sexual abuse (VBE) show significantly more impairment in mental health (subscale).

The third research question and hypotheses are examined by the use of one-way univariate analysis of covariance (ANCOVA) to indicate whether the reported functional impairment of patients with a Somatisation Disorder is influenced by symptom-report. The significant alpha level is set at .05 and where it applies, a bonferoni adjusted alpha level will be used. Effect sizes are interpreted by Cohen's standards (1988, pp. 284-7);; a table of estimates is presented at the end of this chapter.

Several presumptions of the expected outcome can be made. The first research question focused on whether patients suffering from Somatisation Disorder differ significantly from Pain and Undifferentiated Somatoform Disorder in physical en mental functioning. It is presumed that Somatisation Disorder will have significant lower functioning on the scales: general health, bodily pain, role functioning impaired by physical complaints, physical functioning impaired by health, vitality, social functioning, role functioning impaired by emotional problems and mental health when compared to Pain and Undifferentiated Somatoform Disorder. Furthermore, based on several studies Somatoform patients have a tendency to amplify their symptoms. It is expected that in particular Somatisation Disordered patients will do such, while Somatisation Disorder is the most severe type of Somatoform Disorders; their (high) number of symptom-report is paramount in their classification. It is expected that the reported functional impairment (general health, bodily pain, role functioning impaired by physical complaints, physical functioning impaired by health, vitality, social functioning, role functioning impaired by emotional problems and mental health) of Somatisation Disorder is influenced by their high symptom-report.

Research question 3: Are Somatisation Disordered patients reported functional impairment influenced by their symptom-report? More specifically, do any significant differences in functioning of cease when symptom-report is controlled for? Are amplified symptom-reports associated with Somatisation Disordered patients' report in functioning?
Hypotheses:

3a. Patients with Somatisation Disorder (SCID) will show significant lower (overall) physical functioning (SF-36) when compared to Pain or Undifferentiated Somatoform Disorder (SCID), and this impairment is influenced by their high symptom-report; significant results will cease when symptom-report is controlled for.

3b. Patients with Somatisation Disorder (SCID) will show significant lower general health when compared to Pain or Undifferentiated Somatoform Disorder (SCID), and this impairment is influenced by their high symptom-report; significant results will cease when symptom-report is controlled for.

3c. Patients with Somatisation Disorder (SCID) will show significant higher (thus lower means on) bodily pain when compared to Pain or Undifferentiated Somatoform Disorder (SCID), and this impairment is influenced by their high symptom-report; significant results will cease when symptom-report is controlled for.

3d. Patients with Somatisation Disorder (SCID) will show significant lower physical functioning impaired by health when compared to Pain or Undifferentiated Somatoform Disorder (SCID), and this impairment is influenced by their high symptom-report; significant results will cease when symptom-report is controlled for.

3e. Patients with Somatisation Disorder (SCID) will show significant lower role functioning impaired by physical complaints when compared to Pain or Undifferentiated Somatoform Disorder (SCID), and this impairment is influenced by their high symptom-report; significant results will cease when symptom-report is controlled for.

3f. Patients with Somatisation Disorder (SCID) will show significant lower (overall) mental functioning (SF-36) when compared to Pain or Undifferentiated Somatoform Disorder (SCID), and this impairment is influenced by their high symptom-report; significant results will cease when symptom-report is controlled for.

3g. Patients with Somatisation Disorder (SCID) will show significant lower mental health when compared to Pain or Undifferentiated Somatoform Disorder (SCID), and this impairment is influenced by their high symptom-report; significant results will cease when symptom-report is controlled for.

3h. Patients with Somatisation Disorder (SCID) will show significant lower vitality when compared to Pain or Undifferentiated Somatoform Disorder (SCID), and this impairment is influenced by their high symptom-report; significant results will cease when symptom-report is controlled for, and this impairment is influenced by their high symptom-report; significant results will cease when symptom-report is controlled for.

3i. Patients with Somatisation Disorder (SCID) will show significant lower role functioning impaired by emotional problems when compared to Pain or Undifferentiated Somatoform Disorder (SCID), and this impairment is influenced by their high symptom-report; significant results will cease when symptom-report is controlled for.

3j. Patients with Somatisation Disorder (SCID) will show significant lower social functioning when compared to Pain or Undifferentiated Somatoform Disorder (SCID), and this impairment is influenced by their high symptom-report; significant results will cease when symptom-report is controlled for.

Table 1. Criteria for effect size

Size	**Eta Squared (% of variance explained)**	**Cohen criteria of effect**		
		rho	**R^2**	**d**
Small	.01 or 1%	.1	.02	.2
Medium	.06 or 6%	.3	.13	.5
Large	.138 or 13.8%	.5	.26	.8

**in Pallant, 2007; Miles, and Shevlin, 2001*

Results

3.1. Participant characteristics

The current explorative study consists of 36 women and 6 men, with age varying between 20 and 59 years (mean = 40.3). Most patients achieved a medium level high school diploma as highest education form (MULO or MAVO in the Netherlands).

3.2. Presence of Somatoform Disorders

The presence of Somatization Disorder (SD), Pain Disorder (PD) and Undifferentiated Somatoform Disorder (USD) is shown in table 1. A total of 6 patients (14.3%) were excluded from the present study, because they were diagnosed as having a Somatoform Disorder other then SD, PD or USD

Table 2. Somatisation Disorder (SD), Pain Disorder (PD) and Undifferentiated Somatoform Disorder (USD): frequency and percentage

Disorders	Frequency	Percentage
Somatisation	8	19
Pain	17	40.5
Undifferentiated	11	26.2
Total	36	85.7

In this sample there were no patients classified with a comorbid Somatoform Disorder. A Chi-square test for independence indicated no significant association between SD, PD, USD and gender, χ^2 (2, $n = 36$) = .22, p = .05, and between SD, PD, USD and education, χ^2 (6, n = 35) = .72, p = .05. A one-way between-groups analysis of variance (ANOVA) was conducted to explore whether age was different across SD, PD and USD; no significant differences were found F (2, 35) = 2.02, = .15, p = .05. Short, SD, PD and USD were similar groups in gender, education and age.

** Because this is an explorative study, results of the chi-square test for independence are still noted; regardless of the violation of the assumption that at least 80 percent of the cells need to carry expected frequencies of 5 or more.*

3.3. Somatisation Disorder (SD), Pain Disorder (PD), Undifferentiated Somatoform Disorder (USD) and Functional Impairment (SF-36): Hypotheses 1a through 1j

3.3.1. Assessing normality of the dependent variable: Physical functioning impaired by Health (PF), Bodily Pain (BP), Role functioning impaired by Physical Complaints (RP), General Health (GH), Vitality (VT), Role functioning impaired by Emotional Problems (RE), Mental Health (MH) and Social Functioning (SF)

First, statistical analyses to assess normality of the dependent variables show that extreme scores do not have a strong influence on the mean of each subscale, with exception of the subscale: RP. Skewness (2.50) and Kurtosis (5.53) of RP are large, which implicates a large amount of low, extreme scores. Second, the Kolmogorov-Smirnov statistic shows significant results for the following subscales: BP, RP, RE and SF. This significant Kolmogorov-Smirnov statistic implies violation of the assumption of normality. The graphs and tables referring to these assumptions are found in Appendix A (paragraph 1). Third, the distribution of each subscale, as clarified in histograms, Normal Q-Q Plots, Detrended Normal Q-Q Plots and Boxplots, show strong abnormality in RP, RE and SF. Grounded in the aforementioned statistical analyses, the scales of RP, RE and SF will be considered abnormally distributed scales and will receive appropriate non-parametric analyses. It is acknowledged that in order to avoid type I errors, two separate Multivariate Analyses of Variances (MANOVA) on the two components of the SF-36 (mental and physical functional impairment) deserves preference. Due to gross violations however, subscales are analysed separately and, only where possible, analysed in combination with one another (an overview of graphs and tables can be found in Appendix A)

3.3.2. Hypotheses 1a through 1e: assessing physical functional impairment

First, the relationship between Somatisation Disorder (SD), Pain Disorder (PD), Undifferentiated Somatoform Disorder (USD) and physical functional impairment was investigated using Multivariate Analyses of Variances (MANOVA). Preliminary analyses have been performed on three subscales of physical functional impairment: Physical functioning impaired by Health (PF), Bodily Pain (BP) and General Health (GH), to ensure no violation of the assumptions of sample size, normality, linearity, multicollineairity and homogeneity of variance. The graphs and tables referring to these assumptions are found in Appendix A (paragraph 1). There were no significant differences between SD, PD and USD on the combined dependent variable scales (PF, BP and GH), F (6, 33) = .51, p = .79; Pillai's Trace = .10. An inspection of the mean scores indicated that patients with SD did report lower physical functioning on PF, BP and GH when compared to USD and PD. However, hypotheses 1a throughout 1d have to be rejected: SD does not show lower functioning in physical health (overall) or on the subscales GH, BP, PF and, when compared to PD and USD.

Table 3. Mean scores and Standard deviations for Somatisation Disorder (SD), Pain Disorder (PD) and Undifferentiated Somatoform Disorder (USD) on General Health (GH), Physical functioning impaired by Health (PF) and Bodily Pain (BP)

Functional Impairment Scale	Mean SD	Std.dev SD	Mean PD	Std.dev PD	Mean USD	Std.dev USD
General Health	28.14	8.11	38.40	5.54	34.46	6.47
Physical functioning (health)	41.23	9.14	52.00	6.24	51.36	7.29
Bodily Pain	25.23	25.43	36.00	3.93	36.64	4.59

Finally, one scale of physical functional impairment, Role functioning impaired by Physical Complaints (RP), violated the normality assumption, which prevented inclusion in the MANOVA (preliminary analyses with regard to normality can be found in paragraph 3.1 of this chapter). A Kruskal-Wallis Test did not reveal a statistically significant difference in RP across SD, PD and USD, (SD, n = 7: PD, n = 13: USD, n = 11), χ^2 (2, n = *31*) = 1.75, p = .42. Due to a none significant result, Hypothesis 1e cannot be accepted: RP is not lower in patients with SD than patients with PD or USD. An inspection of the mean rank indicated that patients with SD did report lower physical functioning on PF when compared to UD and PD.

Table 4. Mean scores for Somatisation Disorder (SD), Pain Disorder (PD) and Undifferentiated Somatoform Disorder (USD) on Role functioning impaired by Physical Complaints (RP)

Functional Impairment Scale	Mean SD	Mean PD	Mean USD
Role functioning (Physical Complaints)	13.50	17.04	16.36

3.3.2. Hypotheses 1f through 1j: assessing mental functional impairment

First, the relationship between Somatization Disorder (SD), Pain Disorder (PD), Undifferentiated Somatoform Disorder (USD) and mental functional impairment was investigated using Multivariate Analyses of Variances (MANOVA). Preliminary analyses have been performed on MH and VT, that make up for two scales of mental functional impairment, to ensure no violation of the assumptions of sample size, normality, linearity, multicollineairity and homogeneity of variance. The graphs and tables referring to these assumptions are found in Appendix A (paragraph 1). There was a significant differences between SD, PD and USD on the combined dependent variable scales MH and VT, F (4, 33) = 2.64, p = .04; Pillai's Trace = .30; partial eta square = .15. When the results for the dependent variables were considered separately, the only difference to reach statistical significance, using a bonferoni adjusted alpha level of .03, was VT, F (2, 33) = .5.30, p = .01; partial eta square =

.26. An inspection of the mean scores indicated that patients with SD reported lower functioning on VT and MH when compared to USD and PD.

Table 5. Mean scores and Standard deviations for Somatization Disorder (SD), Pain Disorder (PD) and Undifferentiated Somatoform Disorder (USD) on Vitality (VT) and Mental Health (MH)

Functional Impairment Scale	**Mean SD**	**Std.dev SD**	**Mean PD**	**Std.dev PD**	**Mean USD**	**Std.dev USD**
Vitality	14.29	5.45	35.67	3.72	27.27	4.35
Mental health	34.29	6.86	49.60	4.69	49.46	5.47

Furthermore, a follow-up analysis was necessary to investigate how specifically SD, PD and USD differ on VT. A Post-Hoc Tukey HSD Test indicated that the mean score for SD (M = 14.29, Std.dev = 5.45) on VT was significantly lower in comparison to PD (M = 5.67, Std.dev = 3.72). The effect size, calculated using eta squared, was .26. This is in Cohen's (1988, pp. 284-7) terms a large effect size. USD did not differ significantly from SD. These results show that hypothesis 1f and 1g have to be rejected: SD does not show lower functioning in mental health (overall) or on the subscale MH, when compared to PD and USD. Hypothesis 1h can be partially accepted: SD does show lower functioning in VT, but only when compared to PD.

Then, two scales of mental functional impairment, social functioning (SF) and Role functioning impaired by Emotional Problems (RE), violated the normality assumption, which prevented inclusion in the MANOVA (preliminary analyses with regard to normality can be found in paragraph 3.1 of this chapter). A Kruskal-Wallis Test was conducted to investigate differences between SD, PD and USD on the dependent variable RE, (SD, n = 7: PD, n = 15: USD, n = 11), χ^2 (2, $n = 33$) = 2.80, p = .25, however, there were no statistically significant differences found in RE. Hypothesis 1i can therefore be rejected: SD does not show lower RE, when compared to PD and USD. A second Kruskal-Wallis Test did reveal a statistically significant difference in SF across SD, PD and USD, (SD, n = 7: PD, n = 15: USD, n = 11), χ^2 (2, $n = 31$) = 13.16, p = .00.

Finally, a follow-up analysis was necessary to investigate how specifically SD, PD and USD differ in SF. A Post-Hoc Mann-Whitney U Test revealed a significant difference (using a bonferoni adjusted alpha level of .03) in SF between SD (Md = 13, n = 7) and PD (Md = 50, n = 15), U = 5.50, z = -3.36, p = .00, r = .72. This would be considered a large effect size using Cohen's criteria (1988) (an overview table of Cohen's criteria can be found in Appendix A). A second Post-Hoc Mann-Whitney U Test also revealed a significant difference (using a bonferoni adjusted alpha level of .03) in SF between SD (Md = 13, n = 7) and USD (Md = 25, n = 11), U = 14.50, z = -2.26, p = .02, r = .53. This would also be considered a large effect size according to Cohen's criteria (1988). It can be concluded that hypothesis 1j can be accepted: SD shows significant lower SF, when compared to PD and USD.

3.4. Presence of Physical, Sexual and Emotional Abuse

The extend of Physical, Sexual and Emotional Abuse is shown in table 6. Preliminary analyses have been performed and showed that (cumulative) being Emotionally and Sexually abused and experiencing no abuse had to be removed, while they both only represented one case (one case of being Emotionally and Sexually abused had missing scores on the SF-36). A total of 7.2% is excluded from the present study.

Table 6. Different types and combinations of abuse: Frequency and Percentage

Abuse	Frequency	Percentage
None	1	2.4
Emotional	5	11.9
Physical	6	14.3
Sexual	2	4.8
Emotional/Physical	12	28.6
Emotional/Sexual	2	4.8
Sexual/Physical	3	7.1
Sexual/Physical/Emotional	11	26.2
Total	42	100

A Chi-square test for independence indicated no significant difference between the different types of abuse and gender, χ^2 (5, n = 39) = .66, p = .05, or education, χ^2 (10, n = 38) = .68, p = .05 (for graphs and tables referring to these results see appendix A). This means that gender and education levels are equally spread across groups. A one-way between-groups analysis of variance (ANOVA) was conducted to explore whether age was different across the different types of abuse; a significant difference was found, F (5, 38) = 2.47, = .05, p = .05. Short, across the different types of abuse groups patients were not similar in years of age.

** While this is an explorative study, results of the chi-square test for independence are still noted; regardless of the violation of the assumption that at least 80 percent of the cells need to carry expected frequencies of 5 or more.*

3.5. Hypotheses 2a through 2j: Assessing physical and mental impairment across various types of abuse

3.5.1. Hypotheses 2a through 2e: physical functional impairment and abuse

The relationship between Sexual, Physical and Emotional Abuse and physical functional impairment was first investigated using Multivariate Analyses of Variances (MANOVA). Physical functioning impaired by Health (PF) and Bodily Pain (BP) make up for two scales of physical functional impairment and are included in the MANOVA. In order to meet the assumption of sample size (the minimum case in each cell in this study is 2, instead of 3) PF and BP are included, while General Health (GH) was excluded from the MANOVA,. Further Preliminary analyses ensure no violation of the assumptions of normality, linearity,

multicollineairity and homogeneity of variance. Analyses shows no significant differences between any types of abuse on the combined dependent variables (PF and BP), F (10, 37) = 1.11, p = .37; Pillai's Trace = .30. An inspection of the mean scores do however indicate that patients whom experienced a combination of sexual and physical abuse have the lowest Mean on PF and BP. Short, patients whom experienced both these types of abuse report lower physical functioning due to their health and more bodily pain. However, due to the tests not reaching statistical significance, hypothesis 2a, 2c and 2d can be rejected: Experiencing sexual and/or physical abuse was not different in BP and PF, when compared to Emotional abuse.

Table 7. Different types of abuse and Physical functioning impaired by Health: Mean scores and Standard deviations

Abuse	**Mean Std.dev**	**Mean Std.dev**	**Mean Std.dev**	**Mean Std.dev**	**Mean Std.dev**	**Mean Std.dev**
Emotional	47.00 11.11					
Physical		49.17 10.14				
Sexual			70.00 17.57			
Emotional/Physical				46.82 7.50		
Sexual/Physical					32.50 17.57	
Sexual/Physical/Emotional						48.64 7.50

Table 8. Different types of abuse and Bodily Pain: Mean scores and Standard deviations

Abuse	**Mean Std.dev**	**Mean Std.dev**	**Mean Std.dev**	**Mean Std.dev**	**Mean Std.dev**	**Mean Std.dev**
Emotional	49.40 6.83					
Physical		35.00 6.23				
Sexual			46.00 10.80			
Emotional/Physical				31.73 4.60		
Sexual/Physical					26.50 10.80	
Sexual/Physical/Emotional						30.36 4.60

Furthermore, a one-way between groups analysis of variances (ANOVA) was performed on the GH scale of physical functional impairment. Preliminary analyses ensure no violation of the assumptions of normality and homogeneity of variances. The graphs and tables referring to these assumptions are found in Appendix A (paragraph 1). There was a statistically significant difference found at the $p < .05$ level between the abuse types and GH, F (5, 31) = 2.553, p = .05.

Then, a follow-up analysis was necessary to investigate how specifically the different types of abuse differ in GH. A Post-Hoc Tukey HSD Test was conducted and indicated that the mean score for Emotional abuse (M = 57.80, Std.dev = 5.45) was significantly different from (cumulative) Emotional, Physical and Sexual abuse (M = 22.27, Std.dev = 15.55). The effect size, calculated using eta squared, was .41. This is in Cohen's (1988, pp. 284-7) terms a large effect size. Physical and sexual abuse, whether separately viewed or cumulative, did not differ significantly from emotional abuse. Hypothesis 2b can be partially accepted: experiencing Emotional abuse did create the highest scores on GH. However, only when compared to (cumulative) Emotional, Physical and Sexual abuse. Odd is that adding Emotional abuse to the equation of Physical and Sexual abuse does reach statistical significance, while Physical and/or Sexual abuse, does not.

Finally, one scale of physical functional impairment, to know Role functioning impaired by Physical Complaints (RP), violated the normality assumption, which prevented inclusion in the MANOVA (preliminary analyses with regard to normality can be found in paragraph 3.1 of this chapter). A Kruskal-Wallis Test did not reveal a statistically significant difference in RP across the different types of abuse (Emotional, n = 5: Physical, n = 4: Sexual n = 2: Emotional and Physical n = 11: Physical and sexual n = 2: Emotional, Physical and sexual n = 11), χ^2 (5, $n = 35$) = 6.12, p = .30. Hypothesis 2e can be rejected: experiencing Physical and or Sexual abuse was not different from experiencing Emotional abuse in RP.

3.5.2. Hypotheses 2f through 2j: mental functional impairment and abuse

The relationship between the different types of abuse and mental functional impairment was first investigated using Multivariate Analyses of Variances (MANOVA). Preliminary analyses have been performed on Mental Health (MH) and Vitality (VT), which make up for two scales of mental functional impairment, to ensure no violation of the assumptions of sample size, normality, linearity, multicollinearity and homogeneity of variance. The graphs and tables referring to these assumptions are found in Appendix A (paragraph 1). There were no significant differences found between the different types of abuse on the combined dependent variables MH and VT, F (10, 62) = 1.16, p = .33; Pillai's Trace = .32. This result means that across the different abuse types, MH and VT is equal. An inspection of the mean scores indicates that patients who experienced (cumulative) Emotional, Sexual and Physical abuse scored lowest on VT and patients whom experienced sexual abuse scored lowest on MH. Hypothesis 2g and 2h, must be rejected: experiencing Emotional abuse does not show lower functioning in VT and MH.

Table 9. Different types of abuse and Vitality: Mean scores and Standard deviations

Abuse	**Mean Std.dev**	**Mean Std.dev**	**Mean Std.dev**	**Mean Std.dev**	**Mean Std.dev**	**Mean Std.dev**
Emotional	44.00 7.17					
Physical		42.50 6.55				
Sexual			27.50 11.34			
Emotional/Physical				27.73 4.84		
Sexual/Physical					32.50 11.34	
Sexual/Physical/Emotional						22.73 4.83

Table 10. Different types of abuse and Mental Health: Mean scores and Standard deviations

Abuse	**Mean Std.dev**	**Mean Std.dev**	**Mean Std.dev**	**Mean Std.dev**	**Mean Std.dev**	**Mean Std.dev**
Emotional	56.80 7.92					
Physical		54.67 7.23				
Sexual			32.00 12.51			
Emotional/Physical				42.91 5.34		
Sexual/Physical					56.00 12.51	
Sexual/Physical/Emotional						41.46 5.34

Second, two separate Kruskal-Wallis Tests were conducted in order to investigate differences between the types of abuse and Social Functioning (SF) and Role functioning impaired by Emotional Problems (RE); no significant differences were found; (SF: Emotional, n = 5: Physical, n = 6: Sexual n = 2: Emotional and Physical n = 11: Physical and sexual n = 2: Emotional, Physical and sexual n = 11), χ^2 (5, $n = 37$) = 7.31, p = .20, (RE: Emotional, n = 5: Physical, n = 6: Sexual n = 2: Emotional and Physical n = 11: Physical and sexual n = 2: Emotional, Physical and sexual n = 11), χ^2 (5, $n = 37$) = 4.95, p = .42. Hypothesis 2i and 2j must therefore be rejected: experiencing Emotional, Physical or Sexual abuse shows similar patterns in RE and SF.

3.6. Hypothesis 3a through 3j: assessing the influence of symptom report

Two results allowed further investigation: Patients with SD show statistically lower functioning on VT and SF. Further analyses were conducted in order to investigate whether the level of symptom report is influencing the statistical differences found between SD, PD and USD on VT and SF. First, the association between symptom report and VT was investigated using a Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was a significant strong negative correlation between symptom report and VT, r = -.59, n = 39, p = .00, with high levels of symptom report associated with lower levels of VT. Second, the association between symptom report and SF was investigated using a Spearman rho correlation coefficient, because SF violates the assumption of normality. Further preliminary analyses showed no violation of the assumption of linearity and homoscedasticity. There was also a significant strong negative correlation between symptom report and SF, r = -.54, n = 39, p = .00, with high levels of symptom report associated with lower levels of SF. Analyses finally showed a significant correlation between SF and VT, r = .64, n = 39, p = .00, meaning that the two dependent variables are positively correlated. However, SF violates the assumption of homogeneity of regression slopes and will therefore be excluded from further analyses.

Furthermore, a one-way between-groups analysis of covariance (ANCOVA) was conducted to investigate whether the level of symptom report by patients with SD influences their VT. The independent variable was the presence of (SD), (PD) or (USD), the dependent variable was VT. Patient's scores on symptom report were used as a covariate in this analysis. Preliminary checks were conducted to ensure that there was no violation of the assumption of normality, linearity, homogeneity of variances, homogeneity of regression slopes, and reliable measurement of the covariate. After adjusting for symptom report, there was no significant difference between the three disorders on VT, F (2, 29) = 1.51, p = .24, partial eta square = .09. There was a strong relationship between VT and symptom report, as indicated by partial eta squared value of .25. Taking a closer look at the compared means, it can be concluded that only with SD, symptom report influences to a large extend patient's VT. Hypothesis 3 can therefore be partially accepted: in regard to SD, VT increases when symptom report is controlled for.

Table 11. Mean Scores and Standard deviations for Somatisation Disorder (SD), Pain Disorder (PD) and Undifferentiated Somatoform Disorder (USD) on Vitality (VT): controlled for symptom report

Functional Impairment Scale	**Mean SD**	**Std. dev SD**	**Mean PD**	**Std. dev PD**	**Mean UD**	**Std. dev UD**
Vitality	14.29	5.45	35.67	3.72	27.27	4.35
Functional Impairment Scale covariate symptom report						
Vitality	23.48	5.62	32.81	3.4	25.31	3.87

4. Discussion

4.1. Introduction

The present study has been conducted to examine functional impairments in a population of patients with somatoform disorder. This study shows that patients with a Somatisation Disorder are more functionally impaired in a few distinct areas than patients with Pain Disorder and Undifferentiated Somatoform Disorder. Furthermore, when Symptom-Report is controlled for, Somatisation Disordered patients show more Vitality than when Symptom-Report is not controlled for. In the current study, functional impairment was not augmented in patients who reported Emotional, Physical or Sexual abuse in their personal history. These results may contribute to the understanding of Somatoform Disorders and their functional impairment.

4.2. Hypothesis Testing Design

4.2.1. Associations between Somatisation Disorder, Pain Disorder & Undifferentiated Somatoform Disorder and Functional Impairment

Several hypotheses have been formulated with regard to Somatisation Disorder and their functional impairment (table 12: hypotheses and outcome[10]). With regard to the first research question[11], all analyses have been examined.

With regard to Physical Functional Impairments, no significant results were found. This implies that all patients, irrespective of the diagnosis of Somatisation Disorder, Pain Disorder or Undifferentiated Somatoform Disorder; reported equal Physical Functioning.

It is quite remarkable that although Somatisation disorder is considered the most severe type of somatoform disorders and almost consists of an accumulation of other somatoform disorders, their Physical Functioning is just as impaired as Pain Disorder or Undifferentiated Somatoform Disorder. This is inconsistent with earlier findings (Bass, Preveler & House, 2001; Bass & Murphy, 1991; Smith et al., 1986).

This inconsistency may be explained by differences in population in the studies involved. All patients referred to the inpatient facility Eikenboom experience substantial impairment, with 80 percent being confined to a wheelchair (Buhring, and Lether, 2000). In Bass & Murphy's (1991) study, only 10 percent was confined to a wheelchair. Although Bass & Murphy's (1991) sample was also taken from a hospitalized population, their lesser confinement to a wheelchair suggests a sample with better physical functioning. The study of Smith et al., (1986) was limited to a primary care sample suggesting that the impairments might have been less, but it is unknown how severely disabled this sample was. The Eikenboom population represents extremes, as well with regard to crisis situations as with regard to complexity in physical and psychological problems (Buhring, and Lether, 2000). The absence of difference regarding physical functioning between the different diagnosis-groups may be due to the fact

[10] An overall description concerning the expectations, hypotheses, results and outcomes is found in Appendix B.

[11] "Is Somatisation Disorder significantly associated with low functioning in general health, bodily pain, role functioning impaired by physical complaints, physical functioning impaired by health, vitality, social functioning, role functioning impaired by emotional problems and mental health?"

that all three groups did not differ regarding level of impairment, as high level was the criterium for admission in the clinic. In addition, it is possible that due to the patients' physical state being a precondition for admission at Eikenboom, a 'floor-effect' arose. Patients could have a maximum score of one-hundred on "Role Functioning Impaired by Physical Complaints", but this could offer too much leeway[12]. A larger sample would have been able to balance out these problems and would thus been able to detect potential differences where this would not have been able in a population as small as the one in the current condition.

The second part of the research question focused on the patients' mental functioning. Patients with a Somatisation Disorder are significantly more socially impaired than patients with a Pain Disorder or an Undifferentiated Somatoform Disorder. Where the DSM-IV (APA, 2000) holds social and vocational impairment as criteria for all Somatoform Disorders, the finding that Somatisation Disorder was associated with most social impairment was not previously described in literature, as far as we know. Cloninger (1994) however, stated that social impairment was particularly important in diagnosing Somatisation Disorder. This difference in social functioning between Somatisation Disorder, Pain Disorder and Undifferentiated Somatoform Disorder can possibly be explained by the increased burden patients with Somatisation Disorder become for their social environment. Although patients with Pain Disorder and Undifferentiated Somatoform Disorder can also be a potential 'burden' for their environment, patients with Somatisation Disorder may be a particular burden, while important preconditions for Somatisation Disorder diagnosis is onset before the age of 30, and experiencing multiple complaints. One might assume, that particularly with Somatisation patients, over time their social network becomes exhausted. In general, exhaustion of the social network can even more so be the case when there are no clear (organic) causes found for the disease; uncertainty may create a lack of understanding from the environment. Friends and relatives may also become anxious about the illness and therefore avoid the ill person all together. Moreover, it is suggested that among factors, including lengthy hospitalizations, convalescence and difficult regimens, a loss of energy (vitality) causes the patient to withdraw socially (Royer, 2004). Although experimental research needs to be performed in order to establish causal relationships, this study did show the significant positive intercorrelation between Social Functioning and Vitality, which is supportive of the suggestion that patients withdraw socially due to a loss of Vitality (Royer, 2004). Due to Somatisation Disorder being the most severe type, one might assume that this group in comparison to Pain Disorder and Undifferentiated Somatoform Disorder experiences most decreased Vitality. Nevertheless our study only showed such difference in comparison with Pain Disorder. In other words, Somatisation Disorder was not associated with decreased Vitality when compared to Undifferentiated Somatoform Disorder. This lack of difference between Somatisation Disorder and Undifferentiated Somatoform Disorder may be the result of the inclusion of a small sample size; as at face value the mean scores did indicate worse Vitality for Somatisation Disorder.

Somatisation Disorder did not show decreased Mental Health (subscale) or Role Functioning due to Emotional Problems, when compared to Pain Disorder and Undifferentiated Disorder.

[12] Role functioning impaired by physical complaints, social functioning and role functioning impaired by emotional problems were abnormally distributed, with increased amounts of low scores.

These findings may again be attributable to the small sample size, however, an additional explanation may be appropriate. These two subscales, Mental Health (subscale) en Role Functioning impaired by Emotional Problems, represent an individual's psychological functioning. A closer examination of the questions (SF-36) that represent these two subscales, informs us that these questions, opposed to the questions from the other two subscales that make up (overall) Mental Impairment (Vitality and Social Functioning) are quite 'mind-oriented'. Questions representing Vitality and Social Functioning can potentially be understood by the patient in terms of physical functioning (for example: Were you energetic? Were you exhausted? How often has your psychical health *or* emotional problems prevented you from participating in social activities? etc.). The lack of differences between Somatisation Disorder, Pain Disorder and Undifferentiated Disorder on Mental Health (subscale) or Role Functioning due to Emotional Problems may have revealed indirectly Somatoform patients' lack of capacity for mentalization. Somatoform patients have a tendency to focus on the physicality of their problems and often refuse to accept emotional origins, like depression or anxiety. The significant differences found between Somatisation Disorder, Pain Disorder and Undifferentiated Disorder on Vitality and Social Functioning support this suggestion. Comparison with a healthy (control) group could explain whether the lack of differences in Mental Health (subscale) or Role Functioning due to Emotional Problems is attributable to the fact that: there actually are no differences present, or potentially that a different mechanism is operating, such as mentalization.

Table. 12. Overview of Hypotheses from Research Question 1 and Outcome of Hypothesis Testing Design

Hypotheses	**Outcome**
1a. Patients with Somatisation Disorder (SCID) will show significantly more (overall) Physical Functional Impairments (SF-36) when compared to Pain and Undifferentiated Somatoform Disorder (SCID).	Not Confirmed/ no association
1b. Patients with Somatisation Disorder (SCID) will show significantly more impairment in General Health (SF-36) when compared to Pain and Undifferentiated Somatoform Disorder (SCID).	Not Confirmed/ no association
1c. Patients with Somatisation Disorder (SCID) will show significantly more impairment in Bodily Pain (SF-36) when compared to Pain and Undifferentiated Somatoform Disorder (SCID).	Not Confirmed/ no association
1d. Patients with Somatisation Disorder (SCID) will show significantly more impairment in Physical Functioning limited by Health (SF-36) when compared to Pain and Undifferentiated Somatoform Disorder (SCID).	Not Confirmed/ no association
1e. Patients with Somatisation Disorder (SCID) will show significantly more impairment in Role Functioning limited by Physical Complaints (SF-36) when compared to Pain and Undifferentiated Somatoform Disorder (SCID).	Not Confirmed/ no association
1f. Patients with Somatisation Disorder (SCID) will show significantly more (overall) Mental Functional Impairments (SF-36) when compared to Pain and Undifferentiated Somatoform Disorder (SCID).	Not Confirmed/ no association
1g. Patients with Somatisation Disorder (SCID) will show significantly more impairment in Mental Health (SF-36) (subscale) when compared to Pain and Undifferentiated Somatoform Disorder (SCID).	Not Confirmed/ no association

Table. 12. Overview of Hypotheses from Research Question 1 and Outcome of Hypothesis Testing Design (continued)

1h. Patients with Somatisation Disorder (SCID) will show significantly more impairment in Vitality (SF-36) when compared to Pain and Undifferentiated Somatoform Disorder (SCID).	Not Confirmed/ partial association
1i. Patients with Somatisation Disorder (SCID) will show significantly more impairment in Role Functioning limited by Emotional Problems (SF-36) when compared to Pain and Undifferentiated Somatoform Disorder (SCID).	Not Confirmed/ no association
1j. Patients with Somatisation Disorder (SCID) will show significantly more impairment in Social Functioning (SF-36) when compared to Pain and Undifferentiated Somatoform Disorder (SCID).	Confirmed/ sign. association

4.2.2. Associations between Physical, Sexual and Emotional Abuse and Functional Impairment

Several hypotheses (table 13: hypotheses and outcome[13]) have been formulated with regard to the expected associations and significant differences between physical, sexual and emotional abuse and functional impairment[14]. The associations and differences have been examined.

It must first be noted that it is remarkable how all but one patient had experienced some type of abuse. This was not anticipated in advance and made it impossible to establish a comparative baseline. Then, due to the substantial amount of multiplicity of abuse and the small sample size, it was not possible to separate effects of each type of abuse. Furthermore, there were two groups that contained a quite small sample size; Sexual abuse represented two cases and (cumulative) Sexual and Physical abuse represented three cases. Sexual abuse and (cumulative) Sexual and Physical abuse were nonetheless both included in this study in order to accurately describe differences between groups. However, it must be noted that the findings are strongly influenced by small group sizes. The chances of obtaining a statistical significant result were small and therefore offered explanations must be considered with caution.

In earlier studies, the association between physical symptoms and physical and/or sexual abuse has been well documented (Hexel & Sonneck, 2002; Briere and Runtz, 1988; Walker et al.,1992; Nelson, 2002; Salmon & Calderbank, 1995; e.a.). In the current study there was no evidence found of Physical and Sexual abuse leading to more physical impairment than Emotional abuse; there were no findings implying more impairment in Physical Functioning, Bodily Pain or Role Functioning. A closer look at the mean scores do indicate that experiencing (cumulative) physical and sexual abuse was associated with the lowest score on Physical Functioning impaired by Health and Bodily Pain, representing worse functioning in

[13] An overall description concerning the expectations, hypotheses, results and outcome is found in Appendix B.
[14] "Are physical and sexual abuse associated with more physical functional impairment, and, is emotional abuse associated with more mental functional impairment?"

these areas at face value. This suggests that examining these hypotheses with a larger sample size may be worthwhile.

Patients who experienced (cumulative) Emotional, Sexual and Physical abuse had significantly worse General Health when compared with patients who had experienced "only" Emotional abuse. One may assume that experiencing three types of abuse is more severe and therefore has further reaching consequences than experiencing a single type of abuse. However, this suggestive negative correlation of multiplicity and General Health, may be deceptive. (Cumulative) Sexual and Physical abuse, were not associated with worse General Health in comparison to (single) Emotional abuse. If one assumes *more* abuse leads to *less* functioning, then one might expect a significant difference between (cumulative) Sexual and Physical abuse and to (single) emotional abuse. Two alternative explanations may therefore apply; one, the sample in (cumulative) Sexual and Physical abuse was too small to detect real but small differences. Two, the Emotional abuse, in (cumulative) Emotional, Sexual and Physical abuse, contains unique characteristics that cause it to be significantly different from the other groups who experienced Emotional abuse. Initially, Emotional abuse seemed to be a 'protective' characteristic in General Health functioning, there (single) emotional abuse had the best functioning on this scale. When emotional abuse was however, *added* to the equation of (cumulative) Sexual and Physical abuse, it seemed to be the leading factor in worse General Health. This suggests that the General Health effects of Emotional, Sexual and Physical abuse may be confounded (by for example different ages across groups[15]). One can also assume that Emotional abuse in an environment of Sexual and Physical abuse is (in general) a less healthier environment than one where "only" Emotional abuse is present. It can be hypothesized that the Emotional abuse in (cumulative) Emotional, Sexual and Physical abuse is (experienced) more severe than (single) Emotional abuse. While this is mere speculating, it does offer an important option; the findings emphasize the necessity of taking into consideration relevant (confounding) characteristics, such as severity.

The second part of this research question focused on the association between Emotional abuse and Mental Functioning. Based on literature, it was hypothesized that Emotional abuse was associated with more Mental Functional impairment (Sappington, Phar, Tunstall & Rickert, 1997; Katz & Arias, 1999). This study however, did not find any evidence to accept this hypothesis. A possible explanation may come from specific identifiable population characteristics. Depressive and anxiety disorders are very common in abused subjects (Miller, 2006; Weiss, James, Longhurst, and Mazure, 1999; Bifulco, Brown, and Adler, 1991; Stein, Walker, Anderson, Hazen, Ross, Eldridge, and Forde, 1996). In a somatoform population, comorbid depressive and/or anxiety disorders are common as well. Arehart-Treichel (2004) describes in her article a study done by Ingrid Arnold (2004) in the Netherlands, where comorbidity of somatoform disorders was investigated. Of one-hundred and sixteen somatoform patients, seventy-four had concurrent depressive or anxiety disorders. Depressive and anxiety disorders leading to consequent impairment in Mental Functioning seems self-explanatory. Considering that a depressive disorder is characterized by depressive mood, loss of interest in activities, loss of vitality, loss of ability to concentrate and impairment in social

[15] A significant difference was found between groups in years of age, which indicates that across groups age was not similar.

functioning (DSM-IV; APA), it is likely that the Mental Functioning scale of the SF-36 may reflect these depressive characteristics. Depressive and Anxiety disorders might have therefore played a confounding role in determining Mental Functional impairment[16].

Table 13. Overview of Hypotheses from Research Question 2 and Outcome of Hypothesis Testing Design

Hypotheses	**Outcome**
2a. Patients who experienced physical and/or sexual abuse (VBE) will, in comparison with patients who experienced emotional abuse (VBE), show significantly more impairment in physical functioning (overall) (SF-36).	Not confirmed/ no association
2b. Patients who experienced physical and/or sexual abuse (VBE) will, in comparison with patients who experienced emotional abuse (VBE), show significantly more impairment in general health (SF-36).	Not confirmed/ partial association
2c. Patients who experienced physical and/or sexual abuse (VBE) will, in comparison with patients who experienced emotional abuse (VBE), show significantly more impairment in bodily pain (SF-36).	Not confirmed/ no association
2d. Patients who experienced physical and/or sexual abuse (VBE) will, in comparison with patients who experienced emotional abuse (VBE), show significantly more impairment in physical functioning limited by health (SF-36).	Not confirmed/ no association
2e. Patients who experienced physical and/or sexual abuse (VBE) will, in comparison with patients who experienced emotional abuse (VBE), show significantly more impairment in role functioning limited by physical complaints (SF-36).	Not confirmed/ no association

[16] Due to technical problems during the gathering of this data, data on depressive and anxiety disorders were not available.

Table 13. Overview of Hypotheses from Research Question 3 and Outcome of Hypothesis Testing Design (continued)

2f. Patients who experienced emotional abuse (VBE) will, in comparison with patients who experienced physical and/or sexual abuse (VBE) show significantly more impairment in mental health (overall) (SF-36).	Not confirmed/ no association
2g. Patients who experienced emotional abuse (VBE) will, in comparison with patients who experienced physical and/or sexual abuse (VBE) show significantly more impairment in social functioning (SF-36).	Not confirmed/ no association
2h. Patients who experienced emotional abuse (VBE) will, in comparison with patients who experienced physical and/or sexual abuse (VBE) show significantly more impairment in vitality (SF-36).	Not confirmed/ no association
2i. Patients who experienced emotional abuse (VBE) will, in comparison with patients who experienced physical and/or sexual abuse (VBE) show significantly more impairment in role functioning limited by emotional problems (SF-36).	Not confirmed/ no association
2j. Patients who experienced emotional abuse (VBE) will, in comparison with patients who experienced physical and/or sexual abuse (VBE) show significantly more impairment in mental health (subscale) (SF-36).	Not confirmed/ no association

4.2.3 Associations between Somatisation Disorder, Functional Impairment and Symptom-Report

Several hypotheses (table 14: hypotheses and outcome[17]) have been formulated with regard to research question three[18]. The associations and differences have been examined. However, it must be mentioned that the small sample size limits definitive interpretations of this research question.

The functional impairment scale Vitality allowed for analyses of covariance (ANCOVA), as it did not violate the assumptions for ANCOVA, while the other scales did, these results were limited to this vitality scale. The goal of this research question was to establish whether patients with somatisation disorder still experienced significantly less functioning, when it is taken into consideration that somatoform patients have a tendency to amplify symptom reports. Previous studies pointed out that somatoform patients hold maladaptive illness beliefs, including amplified symptom-reports (Duddu et al., 2003; (Chaturvedi et al. 2006; Warwick, 1995). It was, however, not studied before whether functional impairment of Somatisation Disorder *in comparison* with Pain Disorder and Undifferentiated Somatoform Disorder was influenced by the way the patients report their symptoms.

[17] An overall description concerning the expectations, hypotheses, results and outcome is found in Appendix B.
[18] "Are functional impairments in patients with somatisation disorder influenced by their symptom-report?"

In the current study, evidence was found that lack of Vitality of patients suffering from a Somatisation Disorder was in part dependent on exaggerated symptoms, because no significant differences were found in Vitality after controlling for symptom-report.
A possible explanation for this supposed exaggeration may come from the severity of the illness. As been previously described in the introduction of this study, patients with a Somatisation Disorder have been suffering for years, from multiple complaints, and being substantially dependent on their personal environment. Patients entering the inpatient facility of Eikenboom often feel that this facility is their last hope for getting better, and possibly therefore feel a need to exaggerate symptoms to evoke understanding. Severity of Somatisation Disorder may implicate magnifying symptom self-report.

Table 14. Overview of Hypotheses from Research Question 3 and Outcome of Hypothesis Testing Design

Hypotheses	**Outcome**
3a. Somatisation disordered patients' physical functioning (overall) (SF-36) is associated with their symptom-report (SCL-90).	Not confirmed/ not tested
3b. Somatisation disordered patients' general health (SF-36) is associated with their symptom-report (SCL-90).	Confirmed/ sign. association
3c. Somatisation disordered patients' bodily pain (SF-36) is associated with their symptom-report (SCL-90).	Not confirmed/ not tested
3d. Somatisation disordered patients' physical functioning impaired by health (SF-36) is associated with their symptom-report (SCL-90).	Not confirmed/ not tested
3e. Somatisation disordered patients' role functioning impaired by physical complaints (SF-36) is associated with their symptom-report (SCL-90).	Not confirmed/ not tested
3f. Somatisation disordered patients' mental health (overall) (SF-36) is associated with their symptom-report (SCL-90).	Not confirmed/ not tested
3g. Somatisation disordered patients' social functioning (SF-36) is associated with their symptom-report (SCL-90).	Not confirmed/ not tested
3h. Somatisation disordered patients' vitality (SF-36) is associated with their symptom-report (SCL-90).	Not confirmed/ not tested

Table 14. Overview of Hypotheses from Research Question 3 and Outcome of Hypothesis Testing Design (continued)

3i. Somatisation disordered patients' role functioning impaired by emotional problems (SF-36) is associated with their symptom-report (SCL-90).	Not confirmed/ not tested
3j. Somatisation disordered patients' mental health (subscale) (SF-36) is associated with their symptom-report (SCL-90).	Not confirmed/ not tested

4.3. Limitations

Several limitations should be noted regarding the findings of the present study. The first limitation concerns the small sample size. Comparisons across a broader range of somatoform disorders was therefore not possible, neither was categorizing the three single types of abuse. In addition outliers were not removed, because this would even further decrease the sample size. Outliers might have influenced the results of this study. The small sample size has strong implications for interpreting the findings of this study.

A second limitation concerns the use of the instruments of the present study. The Traumatic Experiences Questionnaire (Vragenlijst Belastende Ervaringen; VBE; Luteijn, and Kok, 1985) and the SF-36 are self-report questionnaires. Although both questionnaires report satisfactory reliability and validity (Nijenhuis, Van der Hart & Kruger, 2002; Tsai, Bayliss, & Ware, 1997; Ware et al., 1993; Ware et al., 1994), self-reported questionnaires are limited in their objectivity. In addition to the use of the VBE and the SF-36 other assessments can be used to secure more reliability, such as reports from trained professionals. Furthermore, to examine experiences of abuse only the part that indicated whether abuse was present or absent was used. This means that only several questions have been used in the analyses instead of the whole questionnaire; the complete list could have provided more information about the prevalence of the abuse, such as the age of the patient when the abuse occurred and perceived impact of the abuse. In the current study only broad associations could be examined, while the complete questionnaire would have provided more specific information.

A third limitation concerns the lack of accounting for confounding variables. As has been previously discussed, variables such as depressive or anxiety disorders and severity of the abuse, are important variables relevant to somatoform disorders. Taking these variables into account might have created research findings with higher validity.

A fourth limitation concerns the use of non-parametric tests. These tests had to be used to enable that certain functional impairments could be examined despite of being marked by an abnormally distributed population. The use of non-parametric tests has consequences for the analyses made; the non-parametric test does not require any assumptions regarding the population parameters, and could therefore miss significant differences due to less sensitive test characteristics than a parametric test (Pallant, 2007). In the current study, the non-parametric tests created a risk of, on some hypotheses, having accepted the null-hypotheses where it should have been rejected (Type II error).

A final limitation concerns the characteristics of the patients of Eikenboom. These patients have predominantly complex problems, which inhibits drawing generalized conclusions concerning other institutions for clinical- as well as ambulant mental health services. In short, the results of the current study can not automatically be referred to when a somatoform population is examined.

4.4. Recommendations for further research

As previously mentioned, the present study is an explorative study which contains a relative small sample size. Based on mean scores and some statistical findings, a larger sample might be able to prove somatisation disorder's gross impairment, over other somatoform disorders. It is recommended for further research that depressive and anxiety disorders are established and controlled for, there it is likely that these disorders strongly influence the determination of somatoform patients' functioning.

For future research it will be interesting to investigate the association between maladaptive illness behaviour and functional impairment in a somatoform population. In particular the tendency to focus on physicality of problems and deny emotional origin, adopting sick roles, identifying one-self with the illness, selective and frequent attention to body parts and inappropriate distorted affect are relevant areas to investigate in this population. It is supposed, that there is an association between maladaptive illness behaviour and functional impairment. Support for this suspicion comes from symptom-report playing a role in determining a somatisation disordered patient's vitality. It is recommended that future research will make use of more objective measurements than self-report questionnaires; in particular in a population where maladaptive illness behaviours are prominent, self-report questionnaires are less reliable.

5. Conclusion

Although the results of this study are limited it its generalizability due to a small sample size, the following findings offer important implications with regard to functional impairments in a severe Somatoform population.

First, one may conclude that Somatisation Disorder, Pain Disorder and Undifferentiated Somatoform Disorder experience equal physical functional impairment. Somatisation Disordered patients do experience significantly less vitality than Pain Disordered patients. This finding maybe however dependent on over-reporting of symptoms. When the tendency to amplify symptoms is taken into account, there are no differences between the different Somatoform Disorders examined in this study. Furthermore, patients suffering from a Somatisation Disorder are more socially impaired than patients with a Pain Disorder and Undifferentiated Somatoform Disorder. Due to methodological issues, it was not possible to examine whether the finding that Somatisation Disordered patients were more socially impaired is also dependent on the over-reporting of symptoms. Although this study is one of an explorative character and further research is necessary to establish definitive associations, the findings in the present study offered some evidence for the support of the role of maladaptive illness behaviour in functional impairments.

Second, one may conclude that (cumulative) Emotional, Sexual and Physical abuse is associated with significantly worse General Health than (single) Emotional abuse.

Furthermore, patients with Somatisation Disorder, Pain Disorder and Undifferentiated Somatoform Disorder experience equal mental and physical functional impairment. The inclusion of other relevant population characteristics, such as depressive and anxiety disorders, may yield different findings.

From this study it can be concluded that although results vary too roughly to determine specific (risk) factors associated with specific functional impairments, amplified symptom reports and multiplicity of abuse are relevant factors in considering functional impairments in a somatoform population. Further research should be done on the role of maladaptive illness behaviours in functional impairments. By examining this further, results may include suggestions for treatment for patients with severe somatoform disorders, in particular for patients at Eikenboom.

6. References

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Appendix A

SPSS Output

1. Reliability SF-36

1.1. Scale: Physical Functioning impaired by Health (PF)

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,886	,885	10

1.2. Scale: Role functioning impaired by Physical Problems(RP)

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,655	,655	4

1.3. Scale: Bodily Pain (BP)

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,811	,820	2

1.4. Scale: General Health (GH)

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,804	,812	5

1.5. Scale: Social Functioning (SF)

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,811	,832	2

1.6. Scale: Role functioning impaired by Emotional Problems (RE)

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,641	,681	3

1.7. Scale: Mental health (MH)

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,832	,835	5

1.8. Scale: Vitality (VT)

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,849	,846	4

2.1. Frequencies

Frequencies Somatoform Disorders

		Value Label	N
Som or Pain or Undif	1	som	7
	2	pijn	14
	3	undif	10

2.2. Descriptives

Descriptive Statistics: Age

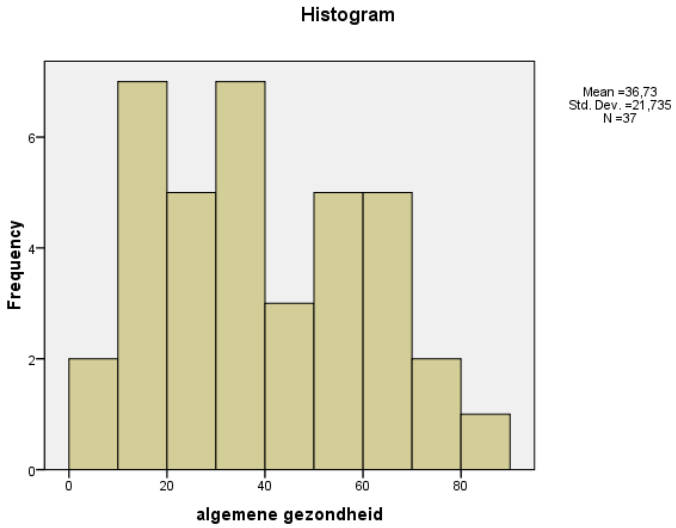
	N	Minimum	Maximum	Mean	Std. Deviation
Age	39	20	59	41,03	11,953
Valid N (listwise)	39				

2.2.3. Descriptives SF-36

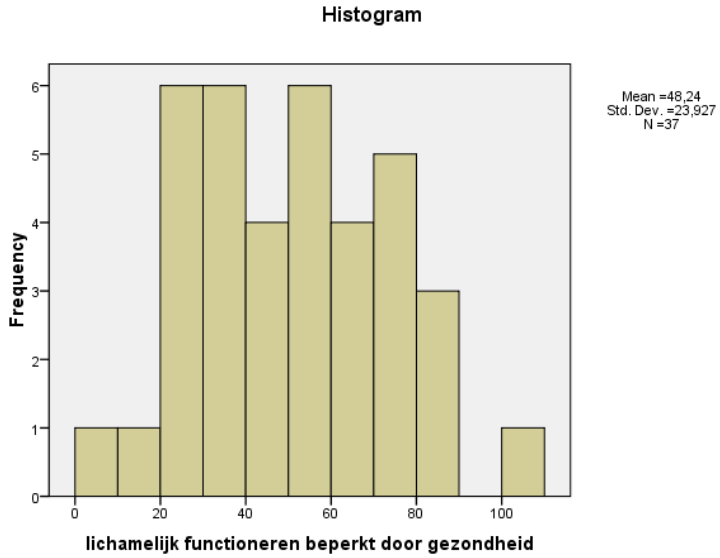
Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
General Health	,135	37	,086	,950	37	,093
Physical functioning impaired by Health	,128	37	,128	,973	37	,485
Bodily pain	,168	37	,010	,952	37	,109
Energy	,104	37	,200*	,975	37	,562
Role functioning impaired by physical complaints	,504	35	,000	,427	35	,000
Mental health	,096	37	,200*	,972	37	,467
Role functioning impaired by emotional problems	,300	37	,000	,756	37	,000
social functioning	,185	37	,003	,933	37	,027

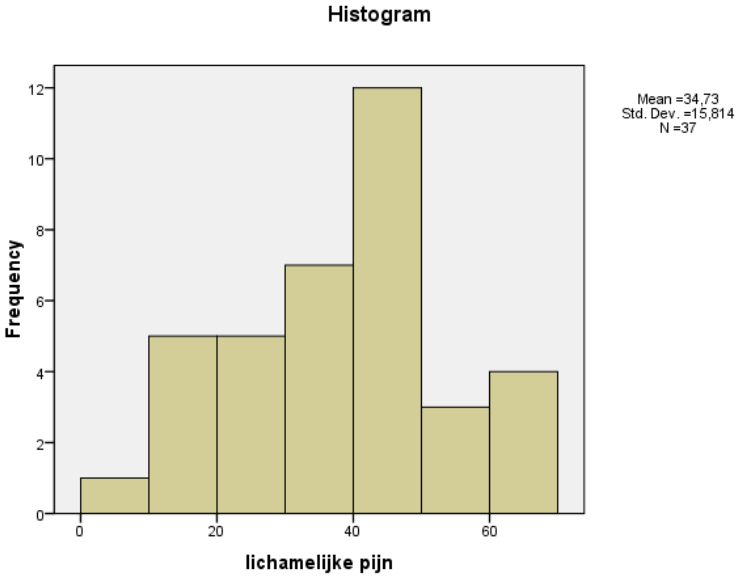
2.2.3.1. General Health (Algemene Gezondheid)



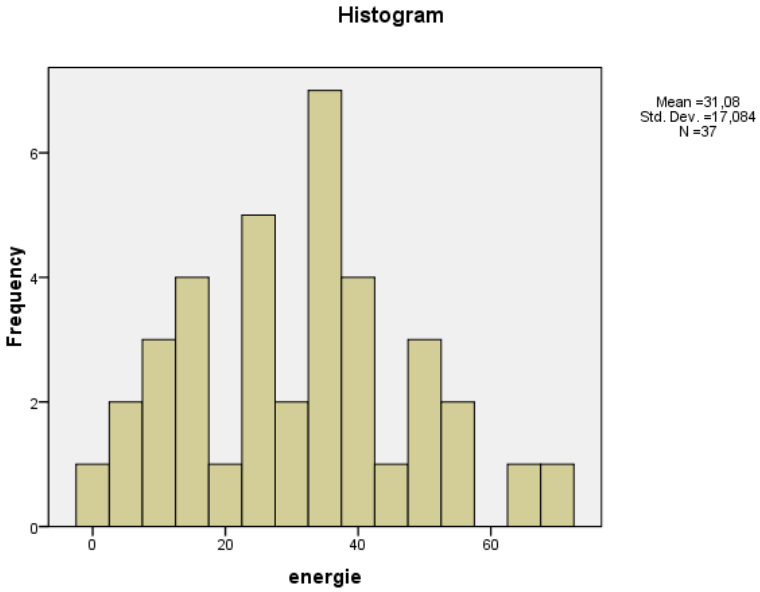
2.2.3.2. Physical Functioning impaired by Health (lichamelijk functioneren beperkt door gezondheid)



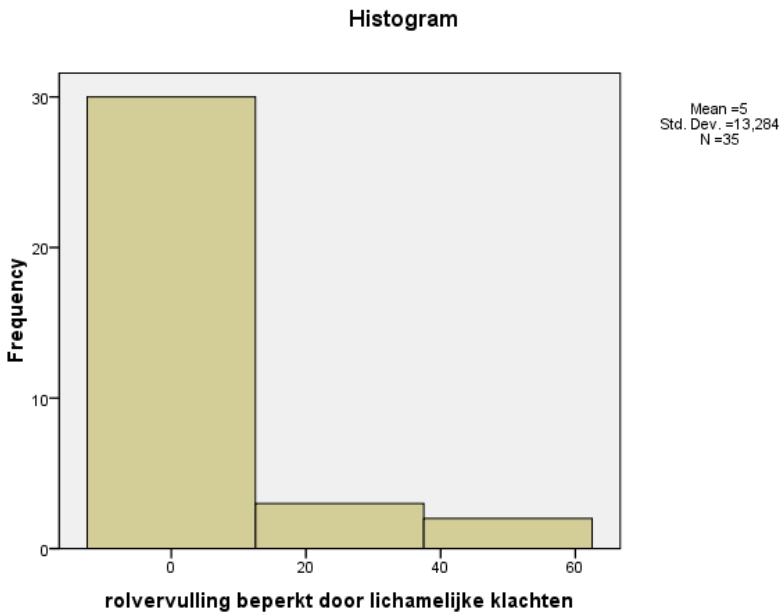
2.2.3.3. Bodily Pain (lichamelijke pijn)



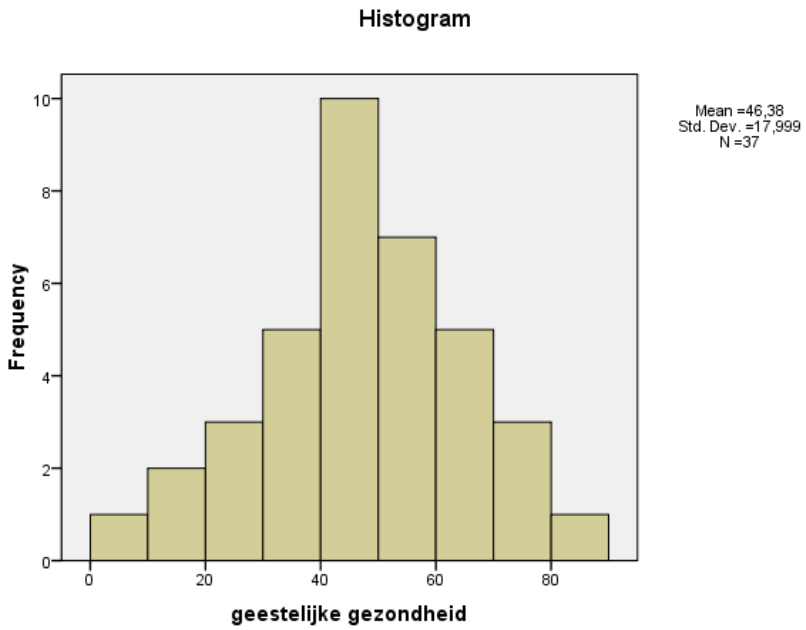
2.2.3.4. Vitality (energie)



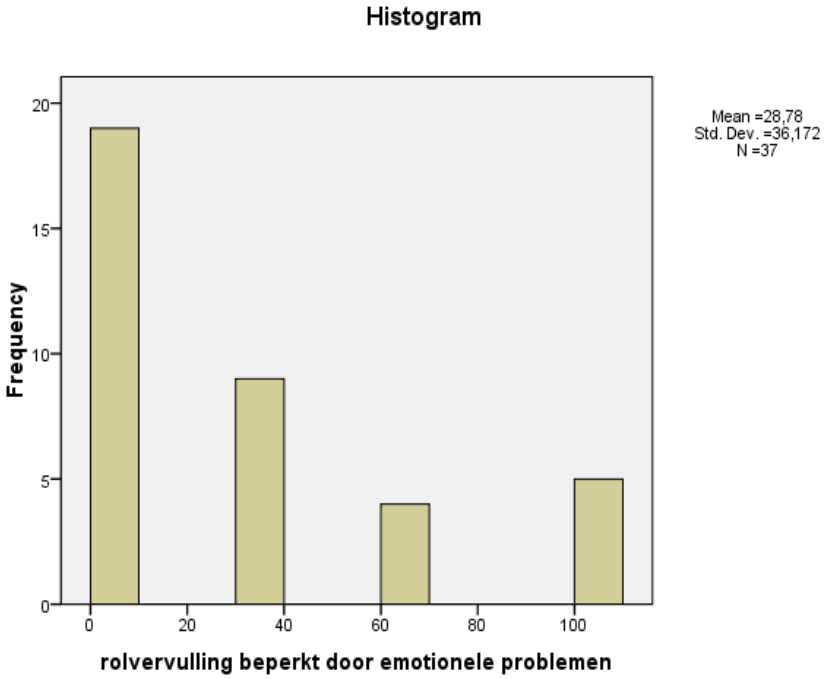
2.2.3.5. Role functioning impaired by physical complaints (rolvervulling beperkt door lichamelijke klachten)



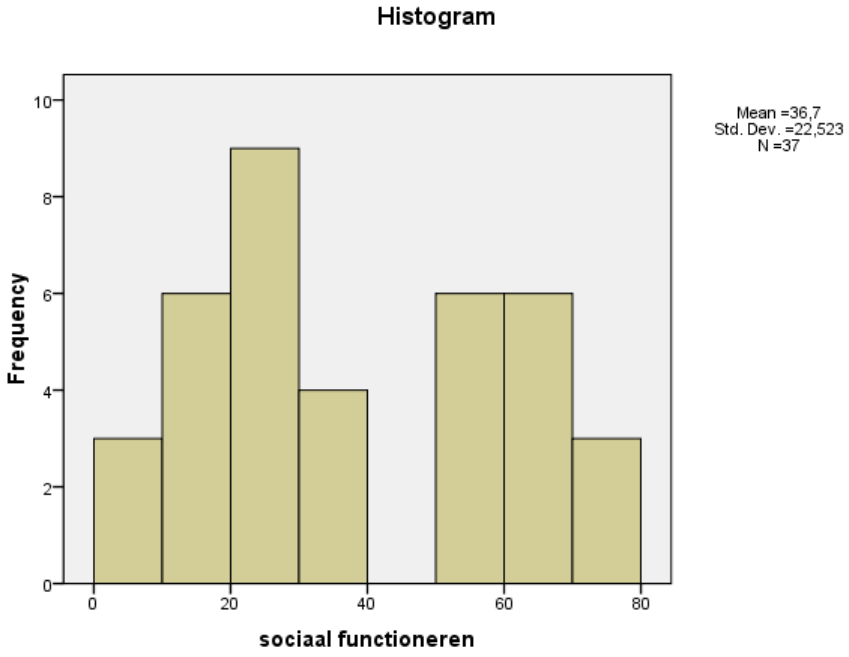
2.2.3.6. Mental Health (geestelijke gezondheid)



2.2.3.7. Role functioning impaired by Emotional Problems (rolvervulling beperkt door emotionele problemen)



2.2.3.8. Social Functioning (sociaal functioneren)



3. Group differences with respect to Somatoform Disorder

3.1. Somatoform Disorder & Gender

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4,523[a]	2	,104
Likelihood Ratio	4,811	2	,090
Linear-by-Linear Association	3,872	1	,049
N of Valid Cases	33		

3.2. Somatoform Disorder & Education

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1,986[a]	4	,738
Likelihood Ratio	1,972	4	,741
Linear-by-Linear Association	,653	1	,419
N of Valid Cases	32		

3.3. Somatoform Disorder & Age

ANOVA

Age					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	601,370	2	300,685	2,186	,130
Within Groups	4125,600	30	137,520		
Total	4726,970	32			

4. MANOVA: Somatoform Disorder, general health, bodily pain and physical functioning impaired by health

Multivariate Tests[c]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	,864	54,856[a]	3,000	26,000	,000	,864
	Wilks' Lambda	,136	54,856[a]	3,000	26,000	,000	,864
	Hotelling's Trace	6,330	54,856[a]	3,000	26,000	,000	,864
	Roy's Largest Root	6,330	54,856[a]	3,000	26,000	,000	,864
SomPainUndif	Pillai's Trace	,119	,567	6,000	54,000	,755	,059
	Wilks' Lambda	,883	,556[a]	6,000	52,000	,763	,060
	Hotelling's Trace	,131	,544	6,000	50,000	,772	,061
	Roy's Largest Root	,115	1,032[b]	3,000	27,000	,394	,103

5. Non-Parametric test Kruskal-Wallis test: Somatoform Disorder and Role functioning impaired by Physical Complaints

	Role functioning impaired by physical complaints
Chi-Square	2,249
df	2
Asymp. Sig.	,325

6. MANOVA: Somatoform Disorder, Vitality and Mental Health

Multivariate Tests[c]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	,859	82,237[a]	2,000	27,000	,000	,859
	Wilks' Lambda	,141	82,237[a]	2,000	27,000	,000	,859
	Hotelling's Trace	6,092	82,237[a]	2,000	27,000	,000	,859
	Roy's Largest Root	6,092	82,237[a]	2,000	27,000	,000	,859
SomPainUndif	Pillai's Trace	,287	2,346	4,000	56,000	,066	,144
	Wilks' Lambda	,716	2,454[a]	4,000	54,000	,057	,154
	Hotelling's Trace	,392	2,551	4,000	52,000	,050	,164
	Roy's Largest Root	,381	5,340[b]	2,000	28,000	,011	,276

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	vitality	2295,530[a]	2	1147,765	5,309	,011	,275
	Mental health	1228,888[b]	2	614,444	1,864	,174	,118
Intercept	vitality	19714,351	1	19714,351	91,197	,000	,765
	Mental health	55248,166	1	55248,166	167,638	,000	,857
SomPijnOngedif	vitality	2295,530	2	1147,765	5,309	,011	,275
	Mental health	1228,888	2	614,444	1,864	,174	,118
Error	vitality	6052,857	28	216,173			
	Mental health	9227,886	28	329,567			
Total	vitality	33900,000	31				
	Mental health	75136,000	31				
Corrected Total	vitality	8348,387	30				
	Mental health	10456,774	30				

7. Univariate Analysis of Variance (ANOVA) and Post-Hoc test: Somatoform Disorder and Vitality

ANOVA

Vitality

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2295,530	2	1147,765	5,309	,011
Within Groups	6052,857	28	216,173		
Total	8348,387	30			

Multiple Comparisons

Vitality Tukey HSD

(I) Som or Pain or Undif	(J) Som of Pijn of Ongedif	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
som	Pain	-22,143*	6,806	,008	-38,98	-5,30
	undif	-13,714	7,246	,159	-31,64	4,21
Pain	som	22,143*	6,806	,008	5,30	38,98
	undif	8,429	6,088	,362	-6,63	23,49
undif	som	13,714	7,246	,159	-4,21	31,64
	pain	-8,429	6,088	,362	-23,49	6,63

8. Non-Parametric Kruskal-Wallis test: Somatoform Disorder and Social Functioning

	social functioning
Chi-Square	12,401
df	2
Asymp. Sig.	,002

9. Non-Parametric Kruskal-Wallis test: Somatoform Disorder and Role Functioning impaired by Emotional Problems

	Role functioning impaired by emotional problems
Chi-Square	3,028
df	2
Asymp. Sig.	,220

10. POST-HOC Mann Whitney *U* test for Somatisation Disorder and Pain Disorder on Social Functioning

	Social functioning
Mann-Whitney U	5,500
Wilcoxon W	33,500
Z	-3,290
Asymp. Sig. (2-tailed)	,001
Exact Sig. [2*(1-tailed Sig.)]	,000[a]

11. POST-HOC Mann Whitney *U* test for Somatisation Disorder and Undifferentiated Somatoform Disorder on Social Functioning

	Social functioning
Mann-Whitney U	14,500
Wilcoxon W	42,500
Z	-2,092
Asymp. Sig. (2-tailed)	,036
Exact Sig. [2*(1-tailed Sig.)]	,043[a]

12. Frequencies of abuse

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	emotional	5	12,8	12,8	12,8
	physical	6	15,4	15,4	28,2
	sexual	2	5,1	5,1	33,3
	emotional & physical	12	30,8	30,8	64,1
	physical & sexual	3	7,7	7,7	71,8
	emotional & sexual & physical	11	28,2	28,2	100,0
	Total	39	100,0	100,0	

13. Group differences across the different types of abuse

13.1. Abuse types and gender

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3,280[a]	5	,657
Likelihood Ratio	4,266	5	,512
Linear-by-Linear Association	,004	1	,950
N of Valid Cases	39		

13.2. Abuse types and education

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7,508[a]	10	,677
Likelihood Ratio	8,094	10	,620
Linear-by-Linear Association	,006	1	,938
N of Valid Cases	38		

13.2. Abuse types and age

ANOVA

Age

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1476,599	5	295,320	2,466	,053
Within Groups	3952,376	33	119,769		
Total	5428,974	38			

14. MANOVA: Abuse, bodily pain and physical functioning impaired by health

Multivariate Tests[c]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	,825	70,578[a]	2,000	30,000	,000	,825
	Wilks' Lambda	,175	70,578[a]	2,000	30,000	,000	,825
	Hotelling's Trace	4,705	70,578[a]	2,000	30,000	,000	,825
	Roy's Largest Root	4,705	70,578[a]	2,000	30,000	,000	,825
EmoPhySex	Pillai's Trace	,303	1,106	10,000	62,000	,372	,151
	Wilks' Lambda	,714	1,103[a]	10,000	60,000	,375	,155
	Hotelling's Trace	,378	1,097	10,000	58,000	,380	,159
	Roy's Largest Root	,302	1,875[b]	5,000	31,000	,127	,232

15. Univariate Analysis of Variance (ANOVA) and Post-Hoc tests: Abuse and General Health

ANOVA

General health

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4960,073	5	992,015	2,553	,048
Within Groups	12047,224	31	388,620		
Total	17007,297	36			

Multiple Comparisons (General Health Tukey HSD)

(I) Emo or Phy or Sex	(J) Emo of Phy of Sex	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
emotional	physical	19,967	11,937	,559	-16,26	56,20
	sexual	6,800	16,493	,998	-43,26	56,86
	emotional & physical	19,709	10,633	,448	-12,56	51,98
	physical & sexual	19,300	16,493	,847	-30,76	69,36
	emotional & sexual & physical	35,527*	10,633	,024	3,26	67,80
physical	emotional	-19,967	11,937	,559	-56,20	16,26
	sexual	-13,167	16,096	,962	-62,02	35,69
	emotional & physical	-,258	10,005	1,000	-30,62	30,11
	physical & sexual	-,667	16,096	1,000	-49,52	48,19
	emotional & sexual & physical	15,561	10,005	,633	-14,81	45,93
sexual	emotional	-6,800	16,493	,998	-56,86	43,26
	physical	13,167	16,096	,962	-35,69	62,02
	emotional & physical	12,909	15,154	,955	-33,09	58,90
	physical & sexual	12,500	19,713	,987	-47,33	72,33
	emotional & sexual & physical	28,727	15,154	,424	-17,27	74,72
emotional & physical	emotional	-19,709	10,633	,448	-51,98	12,56
	physical	,258	10,005	1,000	-30,11	30,62
	sexual	-12,909	15,154	,955	-58,90	33,09
	physical & sexual	-,409	15,154	1,000	-46,40	45,59
	emotional & sexual & physical	15,818	8,406	,432	-9,69	41,33
physical & sexual	emotional	-19,300	16,493	,847	-69,36	30,76
	physical	,667	16,096	1,000	-48,19	49,52
	sexual	-12,500	19,713	,987	-72,33	47,33
	emotional & physical	,409	15,154	1,000	-45,59	46,40
	emotional & sexual & physical	16,227	15,154	,889	-29,77	62,22

Multiple Comparisons (General Health Tukey HSD) (Continued)

(I) Emo or Phy or Sex	(J) Emo of Phy of Sex	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
emotional & sexual & physical	emotional	-35,527*	10,633	,024	-67,80	-3,26
	physical	-15,561	10,005	,633	-45,93	14,81
	sexual	-28,727	15,154	,424	-74,72	17,27
	emotional & physical	-15,818	8,406	,432	-41,33	9,69
	physical & sexual	-16,227	15,154	,889	-62,22	29,77

*. The mean difference is significant at the 0.05 level.

16. Non-parametric Kruskal-Wallis Test: Abuse and Role Functioning impaired by Physical Complaints

	Role functioning impaired by physical complaints
Chi-Square	6,121
df	5
Asymp. Sig.	,295

17. MANOVA: Abuse, Mental Health and Vitality

Multivariate Tests[c]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	,846	82,452[a]	2,000	30,000	,000	,846
	Wilks' Lambda	,154	82,452[a]	2,000	30,000	,000	,846
	Hotelling's Trace	5,497	82,452[a]	2,000	30,000	,000	,846
	Roy's Largest Root	5,497	82,452[a]	2,000	30,000	,000	,846
EmoPhySex	Pillai's Trace	,316	1,162	10,000	62,000	,333	,158
	Wilks' Lambda	,702	1,161[a]	10,000	60,000	,334	,162
	Hotelling's Trace	,399	1,158	10,000	58,000	,337	,166
	Roy's Largest Root	,321	1,988[b]	5,000	31,000	,108	,243

18. Non-parametric Kruskal-Wallis test: Abuse and Role functioning impaired by Emotional Problems

	Role functioning impaired by emotional problems
Chi-Square	4,945
df	5
Asymp. Sig.	,423

19. Non-parametric Kruskal-Wallis test: Abuse and Social Functioning

	Social functioning
Chi-Square	7,310
df	5
Asymp. Sig.	,199

20. Spearman's rho and Pearson's correlation: social functioning, vitality and symptom-report

Correlations

			psychoneuroticisme	social functioning	vitality
Spearman's rho	psychoneuroticisme	Correlation Coefficient	1,000	-,524**	-,655**
		Sig. (2-tailed)	.	,001	,000
		N	39	37	37
	Social functioning	Correlation Coefficient	-,524**	1,000	,713**
		Sig. (2-tailed)	,001	.	,000
		N	37	37	37
	vitality	Correlation Coefficient	-,655**	,713**	1,000
		Sig. (2-tailed)	,000	,000	.
		N	37	37	37

Correlations

		psychoneuroticisme	social functioning	vitality
psychoneuroticisme	Pearson Correlation	1,000	-,532**	-,641**
	Sig. (2-tailed)		,001	,000
	N	39,000	37	37
Social functioning	Pearson Correlation	-,532**	1,000	,677**
	Sig. (2-tailed)	,001		,000
	N	37	37,000	37
vitality	Pearson Correlation	-,641**	,677**	1,000
	Sig. (2-tailed)	,000	,000	
	N	37	37	37,000

21. Analysis of covariance (ANCOVA): Symptom Report and Vitality

Tests of Between-Subjects Effects

Dependent Variable: vitality

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	4221,686[a]	3	1407,229	9,207	,000	,506
Intercept	6042,440	1	6042,440	39,534	,000	,594
totscl	1926,156	1	1926,156	12,602	,001	,318
SomPainUndif	406,546	2	203,273	1,330	,281	,090
Error	4126,701	27	152,841			
Total	33900,000	31				
Corrected Total	8348,387	30				

a. R Squared = ,506 (Adjusted R Squared = ,451)

Appendix B (overview of hypotheses, results and outcomes)

With regard to the first research question[19], all the associations were expected to be significant. The associations were predicted to show lower functioning for patients with Somatisation Disorder when they are compared to Pain Disorder and Undifferentiated Somatoform Disorder. Unfortunately, not all associations were significant. An overview of the hypotheses, results and outcomes with respect to question 1 can be found in the following table.

Overview of Hypotheses, Results and Outcomes from Research Question 1

Hypotheses and results	**Outcome**
1a. Patients with Somatisation Disorder (SCID) will show significantly more (overall) Physical Functional Impairments (SF-36) when compared to Pain and Undifferentiated Somatoform Disorder (SCID). *There were no significant differences between SD, PD and USD on the combined dependent variable scales of overall physical functional impairment.*	Not Confirmed/ no association
1b. Patients with Somatisation Disorder (SCID) will show significantly more impairment in General Health (SF-36) when compared to Pain and Undifferentiated Somatoform Disorder (SCID). *There were no significant differences between SD, PD and USD on the dependent variable scale GH (p = .79).*	Not Confirmed/ no association
1c. Patients with Somatisation Disorder (SCID) will show significantly more impairment in Bodily Pain (SF-36) when compared to Pain and Undifferentiated Somatoform Disorder (SCID). *There were no significant differences between SD, PD and USD on the dependent variable scale BP (p = .79).*	Not Confirmed/ no association
1d. Patients with Somatisation Disorder (SCID) will show significantly more impairment in Physical Functioning impaired by Health (SF-36) when compared to Pain and Undifferentiated Somatoform Disorder (SCID). *There were no significant differences between SD, PD and USD on the dependent variable scale PF (p = .79).*	Not Confirmed/ no association

[19] *Research Question 1*: is Somatisation Disorder significantly associated with lower functioning in general health, bodily pain, role functioning impaired by physical complaints, physical functioning impaired by health, vitality, social functioning, role functioning impaired by emotional problems and mental health?

Hypotheses and Results (continued)	**Outcome**
1e. Patients with Somatisation Disorder (SCID) will show significantly more impairment in Role Functioning limited by Physical Complaints (SF-36) when compared to Pain and Undifferentiated Somatoform Disorder (SCID). *There were no significant differences between SD, PD and USD on the dependent variable scale RP (p = .42).*	Not Confirmed/ no association
1f. Patients with Somatisation Disorder (SCID) will show significantly more (overall) Mental Functional Impairments (SF-36) when compared to Pain and Undifferentiated Somatoform Disorder (SCID). *There were no significant differences between SD, PD and USD on the combined dependent variable scales of overall mental functional impairment.*	Not Confirmed/ no association
1g. Patients with Somatisation Disorder (SCID) will show significantly more impairment in Mental Health (SF-36) (subscale) when compared to Pain and Undifferentiated Somatoform Disorder (SCID). *There were no significant differences between SD, PD and USD on the dependent variable scale MH (p = .??).*	Not Confirmed/ no association
1h. Patients with Somatisation Disorder (SCID) will show significantly more impairment in Vitality (SF-36) when compared to Pain and Undifferentiated Somatoform Disorder (SCID). *There was a significant association of VT (p = .01), but only when SD was compared to PD.*	Not Confirmed/ partial association
1i. Patients with Somatisation Disorder (SCID) will show significantly more impairment in Role Functioning limited by Emotional Problems (SF-36) when compared to Pain and Undifferentiated Somatoform Disorder (SCID). *There were no significant differences between SD, PD and USD on the dependent variable scale RE (p = .25).*	Not Confirmed/ no association
1j. Patients with Somatisation Disorder (SCID) will show significantly more impairment in Social Functioning (SF-36) when compared to Pain and Undifferentiated Somatoform Disorder (SCID). *There was a significant difference between SD, PD and USD on the dependent variable scale SF (p = .00).*	Confirmed/ sign. association

With regard to the second research question[20], all the associations were expected to be significant. The associations were predicted to show lower physical functioning for patients who experienced physical and sexual abuse. Also, the associations were predicted to show lower mental functioning for patients who experienced emotional abuse. Unfortunately, not all associations were significant. An overview of hypotheses, results and outcomes with respect to question 2 can be found in the following table.

Overview of Hypotheses, Results and Outcomes from Research Question 2

Hypotheses and Results	**Outcome**
2a. Patients who experienced physical and/or sexual abuse (VBE) will, in comparison with patients who experienced emotional abuse (VBE), show significantly more impairment in physical functioning (overall) (SF-36). *There were no significant differences between Phy, Sex and Emo abuse on the combined dependent variable scales of overall mental functional impairment.*	Not confirmed/ no association
2b. Patients who experienced physical and/or sexual abuse (VBE) will, in comparison with patients who experienced emotional abuse (VBE), show significantly more impairment in general health (SF-36). *There were no significant differences between Phy, Sex and Emo abuse on the dependent variable scale of GH. However, experiencing accumulative Phy, Sex and Emo did differ significantly from single Emo abuse (p = .05).*	Not confirmed/ partial association
2c. Patients who experienced physical and/or sexual abuse (VBE) will, in comparison with patients who experienced emotional abuse (VBE), show significantly more impairment in bodily pain (SF-36). *There were no significant differences between Phy, Sex and Emo abuse on the dependent variable scale of BP (p = .37).*	Not confirmed/ no association

[20] *Research Question 1*: is Physical and Sexual abuse associated with worse physical functioning and is Emotional abuse associated with worse mental functioning?

Hypotheses and Results (continued)	**Outcome**
2d. Patients who experienced physical and/or sexual abuse (VBE) will, in comparison with patients who experienced emotional abuse (VBE), show significantly more impairment in physical functioning limited by health (SF-36). *There were no significant differences between Phy, Sex and Emo abuse on the dependent variable scale of PF (p = .37).*	Not confirmed/ no association
2e. Patients who experienced physical and/or sexual abuse (VBE) will, in comparison with patients who experienced emotional abuse (VBE), show significantly more impairment in role functioning limited by physical complaints (SF-36). *There were no significant differences between Phy, Sex and Emo abuse on the dependent variable scale of RP (p = .30).*	Not confirmed/ no association
2f. Patients who experienced emotional abuse (VBE) will, in comparison with patients who experienced physical and/or sexual abuse (VBE) show significantly more impairment in mental health (overall) (SF-36). *There were no significant differences between Phy, Sex and Emo abuse on the combined dependent variable scales of overall mental functional impairment.*	Not confirmed/ no association
2g. Patients who experienced emotional abuse (VBE) will, in comparison with patients who experienced physical and/or sexual abuse (VBE) show significantly more impairment in social functioning (SF-36). *There were no significant differences between Phy, Sex and Emo abuse on the dependent variable scale of SF (p = .20).*	Not confirmed/ no association
2h. Patients who experienced emotional abuse (VBE) will, in comparison with patients who experienced physical and/or sexual abuse (VBE) show significantly more impairment in vitality (SF-36). *There were no significant differences between Phy, Sex and Emo abuse on the dependent variable scale of VT (p = .33).*	Not confirmed/ no association

Hypotheses and Results (continued)	**Outcome**
2i. Patients who experienced emotional abuse (VBE) will, in comparison with patients who experienced physical and/or sexual abuse (VBE) show significantly more impairment in role functioning limited by emotional problems (SF-36). *There were no significant differences between Phy, Sex and Emo abuse on the dependent variable scale of RE (p = .42).*	Not confirmed/ no association
2j. Patients who experienced emotional abuse (VBE) will, in comparison with patients who experienced physical and/or sexual abuse (VBE) show significantly *There were no significant differences between Phy, Sex and Emo abuse on the dependent variable scale of MH (p = .33).*	Not confirmed/ no association

With regard to the third research question[21], the association between functioning and symptom-report of patients with Somatisation Disorder is expected to be significant. The associations were predicted to show no more significant differences in functioning for patients with Somatisation Disorder, after adjusting for symptom-report. This lack of difference would imply that the self-reported functioning of patients with a Somatisation Disorder is dependent on their symptom-report. Unfortunately, due to previous outcomes showing only some significant differences and due to methodological issues not all current associations could be examined. An overview of hypotheses, results and outcomes with respect to question 3 can be found in the following table.

Overview of Hypotheses, Results and Outcomes from Research Question 3

Hypotheses and Results	**Outcome**
3a. Somatisation disordered patients' physical functioning (overall) (SF-36) is associated with their symptom-report (SCL-90).	Not confirmed/ not tested
3b. Somatisation disordered patients' general health (SF-36) is associated with their symptom-report (SCL-90).	Not Confirmed/ not tested

[21] *Research Question 1*: is the functioning of Somatisation Disordered patients associated with amplified symptom-reports, and do significant differences in functioning between SD, PD and USD cease when symptom-report is controlled for?

Hypotheses and Results (continued)	**Outcome**
3c. Somatisation disordered patients' bodily pain (SF-36) is associated with their symptom-report (SCL-90).	Not confirmed/ not tested
3d. Somatisation disordered patients' physical functioning impaired by health (SF-36) is associated with their symptom-report (SCL-90).	Not confirmed/ not tested
3e. Somatisation disordered patients' role functioning impaired by physical complaints (SF-36) is associated with their symptom-report (SCL-90).	Not confirmed/ not tested
3f. Somatisation disordered patients' mental health (overall) (SF-36) is associated with their symptom-report (SCL-90).	Not confirmed/ not tested
3g. Somatisation disordered patients' social functioning (SF-36) is associated with their symptom-report (SCL-90).	Not confirmed/ not tested
3h. Somatisation disordered patients' vitality (SF-36) is associated with their symptom-report (SCL-90). *A high level of symptom-report was significantly associated with lower levels of VT ($p = .00$). There were no more significant differences between SD, PD and USD when symptom-report was controlled for ($p = .24$).*	Confirmed/ Sign. association
3i. Somatisation disordered patients' role functioning impaired by emotional problems (SF-36) is associated with their symptom-report (SCL-90).	Not confirmed/ not tested
3j. Somatisation disordered patients' mental health (subscale) (SF-36) is associated with their symptom-report (SCL-90).	Not confirmed/ not tested