According to the schema model, persistent psychological problems are developed and maintained through stable cognitive structures, early maladaptive schemas (EMSs). This study explores EMSs in relation to key clinical concerns in depressive disorders: chronic course of depression and suicidal ideation. Exploring the associations between EMSs, chronic depression and suicidality offers insights into cognitive aspects of depression and may aid in the assessment and treatment of depression.
EARLY MALADAPTIVE SCHEMAS, CHRONIC DEPRESSION AND SUICIDAL IDEATION

THE ROLE OF MALADAPTIVE COGNITIVE STRUCTURES AMONG PATIENTS WITH DEPRESSION
Niko Flink

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ABSTRACT

Depression is a common and aetio logically complex mental disorder with a major societal and individual burden. There are effective treatment options for depression, but the chronic course of the disorder and increased risk of suicidality remain significant challenges in the management of depression. According to schema model, persistent adulthood psychological problems are developed and maintained through early maladaptive schemas (EMSs). EMSs are stable maladaptive cognitive structures, which are thought to develop during childhood and adolescence and are considered particularly relevant in relation to personality disorders. Schema therapy, a form of psychotherapy aiming to modify and alter EMSs, has shown to be effective in the treatment of personality disorders. More recently, EMSs have been noted as potentially significant factors in relation to chronic depression and suicidality.

The aim of this thesis was to explore EMSs in relation to chronic depression lasting a minimum of two years and suicidal ideation in depressed outpatients. In the first study, patients suffering from current chronic depression were compared to patients with current chronic depression and comorbid personality disorder, and to patients remitted from chronic depression. In the second study, chronically depressed patients were compared to patients with borderline personality disorder. In the third study, the aim was to explore whether EMSs were related to suicidal ideation when the effects of concurrent severity of depressive symptoms and hopelessness were taken into account.

In the first study, it was observed that currently chronically depressed patients with comorbid personality disorder endorsed EMSs at greater intensity than did other groups. Although patients remitted from chronic depression had less severe depressive symptoms and a higher degree of functioning than currently chronically depressed patients, there were no differences between the two groups in terms of EMSs. In the second study, patients with chronic depression showed similar endorse-
ment of EMSs to patients with borderline personality disorder when the effect of concurrent psychological distress was taken into account. These findings support notions that, in addition to personality disorders, EMSs may be related to other long-term psychological problems in adulthood. Assessing EMSs may be beneficial in case conceptualisations of long-term mental disorders. The results of the third study showed that the tendency to interpret events in a catastrophic manner was more pronounced in patients with suicidal ideation after the effects of depressive symptoms and hopelessness were taken into account. These findings highlight that, in addition to adequately addressing depressive symptoms and hopelessness, it is important to consider the cognitive structures of the patient in the management of suicidality.

*Keywords: early maladaptive schema, schema model, schema therapy, major depressive disorder, chronic depression, suicidal ideation*
Flink, Niko
Varhaiset haitalliset skeemat, krooninen masennus ja itsetuhoiset ajatuukset. Haitallisten tiedonkäsittelyrakenteiden rooli masennuspotilailla.
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TIIVISTELMÄ


Ensimmäisessä osatutkimuksessa havaittiin, että kroonisesta masennuksesta ja samanaikaisesta persoonallisuushäiriöstä kärsivien potilaiden haitalliset skeemat
olivat voimakkaampia kuin verrokkiryhmillä. Sen sijaan pitkäkestoisesta masennuksesta toipuneiden ja tutkimusajankohtana masennuksesta kärsineiden skeemojen välillä ei ollut eroa, vaikka toipuneiden masennusoireet olivat lievempiä ja heidän toimintakykyynsä oli parempi. Toisessa osatutkimuksessa selvisi, että pitkäkestoisesta masennuksesta ja tunne-elämältään epävakaasta persoonallisuushäiriöstä kärsivien skeemat olivat pääosin samankaltaisia, kun huomioitiin ahdistusoireiden vaikutus. Tulokset tukevat haitallisten skeemojen mahdollista yhteyttä persoonallisuushäiriöiden ohella myös muuhun aikuisiän pitkäkestoiseen psyykkiseen oireiluun. Skeemojen arvioinnista voi olla hyötyä pitkäkestoisten mielenterveyden häiriöiden tapausjäsennyksessä.

Kolmannessa osatutkimuksessa havaittiin, että itsetuhoisista ajatuksista kärsivillä masennuspotilailla oli voimakkaampi taipumus tulkita tulevia tapahtumia katastrofoivalla tavalla riippumatta masennuksen vaikeudesta tai toivottomuudesta. Tulos korostaa sitä, että itsetuhoisuuden hoidossa on syytä kiinnittää huomiota masennusoireiden ja toivottomuuden lisäksi myös potilaan tiedonkäsittelymalleihin.

Avainsanat: varhaiset haitalliset skeemat, skeemamalli, skeematerapia, masennus, krooninen masennus, itsetuhoiset ajatukset
ACKNOWLEDGEMENTS

This study was carried out in collaboration between the School of Educational Sciences and Psychology and the Institute of Clinical Medicine, Department of Psychiatry of the University of Eastern Finland. I wish to thank all people who supported and guided me during this process.

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Joensuu, 18 November 2018
Niko Flink
LIST OF ORIGINAL PUBLICATIONS

The dissertation is based on the following original publications, which are referred to in the text by Roman numerals I–III.


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Some previously unpublished data is presented (Chapter 5.3).
ABBREVIATIONS

ANOVA  Analysis of variance
APA    American Psychiatric Association
Axis I  Clinical mental disorders
Axis II Personality disorders and intellectual disabilities
BDI-21  Beck Depression Inventory
BPD    Borderline personality disorder
CBASP  Cognitive behavioural analysis system of psychotherapy
CBT    Cognitive behavioural therapy
CT     Cognitive therapy
DSM-III Diagnostic and Statistical Manual, 3rd edition
DSM-IV Diagnostic and Statistical Manual, 4th edition
DSM-5  Diagnostic and Statistical Manual, 5th edition
DPD    Depressive personality disorder
EMS    Early maladaptive schema
EPA    European Psychiatric Association
GAF    Global Assessment of Functioning
HPA    Hypothalamus-pituitary-adrenal gland
HS     Beck Hopelessness Scale
MDD    Major depressive disorder
PDD    Persistent depressive disorder
RCT    Randomised controlled trial
SD     Standard deviation
SCID-I Structured Clinical Interview for DSM-IV Axis I Disorders
SCID-II Structured Clinical Interview for DSM-IV Axis II Disorders
YPI    Young Parenting Inventory
YSQ    Young Schema Questionnaire
WHO    World Health Organization
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Depressive disorders, i.e. major depressive disorder (MDD) and dysthymia, are common mental disorders characterised by sadness, loss of interest or pleasure, feelings of guilt, low self-worth or tiredness, disturbed sleep or appetite, and poor concentration. The societal and individual impact of depressive disorders is substantial. World Health Organization (WHO) reported that in 2015 globally 322 million people suffered from depressive disorders, equivalent to 4.4% of world’s population (WHO, 2017). The number of individuals living with depression has risen by 18.4% from 2005 to 2015 (Vos et al., 2016), making depression currently the leading cause of disability around the world (WHO, 2017) and a major contributor to deaths by suicide (Ferrari et al., 2013b).

An episode of MDD typically lasts a few months (Spijker et al., 2002), but a significant proportion of the individuals with depression experience long-lasting symptoms. Around 20-30% of patients with MDD have a chronic course of depression, and nearly 50% of patients in specialized mental health care have persistent depressive symptoms (Angst, Gamma, Rössler, Ajdacic, & Klein, 2009; Arnow & Constantino, 2003; Gilmer et al., 2008; Murphey & Byrne, 2012; Spijker et al., 2002; Torpey & Klein, 2008). Compared with episodic depression, the chronic course of depression is associated with poorer treatment response to pharmacotherapy and psychotherapy (Cuijpers et al., 2010; Kocsis, 2003), greater costs and service use, increased disability and higher rates of hospitalisation and suicide (Arnow et al., 2003; Blanco et al., 2010; Rhebergen et al., 2010; Smit et al., 2006; Torpey & Klein, 2008).

Increasing evidence indicates that there are aetiological and clinical differences between the episodic and chronic course of depression. Higher rates of comorbid personality disorders (Blanco et al., 2010; Rothschild & Zimmerman, 2002), adverse childhood experiences (Hayden & Klein, 2001; Wiersma et al., 2009) and interpersonal difficulties (Constantino et al., 2008; Riso, Miyatake, & Thase, 2002) are typically associated with chronic depression. Therefore, the European Psychiatric Association (EPA) has recently highlighted the need for an integrative approach to the management of chronic depression, which takes into account not only the persistence or severity of symptoms, but also the role of temperamental and developmental factors (Jobst et al., 2016).

According to the schema model by Young and colleagues (Young, 1990; Young, Klosko, & Weishaar, 2003), persistent psychopathology develops and maintains through stable maladaptive cognitive structures concerning the self and the world, early maladaptive schemas (EMSs). The schema model presents that EMSs emerge from unmet basic needs and traumatic experiences during childhood, combined with an individual’s emotional temperament, and that these remain stable without appropriate therapeutic intervention (Young et al., 2003). The schema model was originally
developed to conceptualise personality pathology (Young, 1990), and psychotherapeutic treatment aiming to modify EMSs, schema therapy, has shown to be effective in the treatment of personality disorders (Giesen-Bloo et al., 2006; Sempertegui, Karreman, Arntz, & Bekker, 2013).

In recent years, EMSs have increasingly been associated with depressive disorders (Renner, Lobbestael, Peeters, Arntz, & Huibers, 2012; Wang, Halvorsen, Eise-emann, & Waterloo, 2010). There has also been growing interest in adapting schema therapy in the treatment of chronic depression due to how the basic assumptions of the schema model fit with the established risk factors of persistent depression (Malogiannis et al., 2014; Renner, Arntz, Leeuw, & Huibers, 2013; Renner, Arntz, Peeters, Lobbestael, & Huibers, 2016). EMSs have also been highlighted as potential contributors to suicidality (Lewis, Lumley, & Grunberg, 2015; Nilsson, 2016). Despite the broadening interest, the majority of the empirical research on the role of EMSs in mental disorders has focused on personality disorders (Hawke & Provencher, 2011b; Sempertegui et al., 2013).

In this thesis, the aim is to explore the role of EMSs among patients with depression. Specifically, the focus is on key clinical concerns in depressive disorders: the chronic course of depression and suicidal ideation in depressed patients. Further exploring the associations between EMSs, chronic depression and suicidality could offer insights into cognitive aspects of depression and potentially aid in the assessment and treatment of depression and suicidality.
2 REVIEW OF THE LITERATURE

2.1 MAJOR DEPRESSION AND CHRONIC DEPRESSION

2.1.1 Definition of major depressive disorder

Temporal depressive mood and feelings of sadness are experienced universally at some point in everyone’s life and should be distinguished from clinically relevant depressive experiences that warrant treatment. Clinical unipolar depression, more frequently referred to as major depressive disorder (MDD) or major depression, is a debilitating disease characterised by at least one discrete depressive episode lasting a minimum of two weeks and consisting of clear changes in mood, interests and pleasure, impaired cognitive functioning and vegetative symptoms (Otte et al., 2016).

The criteria used to diagnose MDD are largely similar in the two commonly used diagnostic systems: the WHO’s International Classification of Diseases (ICD) and the American Psychiatric Association’s (APA) Diagnostic and Statistical Manual (DSM). The current 10th edition of the ICD (ICD-10; WHO, 1993) is commonly used in many health care systems around the world, while the DSM is used in North America. The DSM in its fourth (DSM-IV; APA, 1994) or fifth (DSM-5; APA, 2013) edition is predominantly used for research purposes worldwide.

Table 1 summarises the diagnostic criteria of MDD according to ICD-10, DSM-IV and DSM-5. The main differences in diagnostic criteria for MDD between the diagnostic systems are the number of symptoms required to make a diagnosis (four in ICD-10 and five in DSM), the number of core symptoms of MDD (three in the ICD-10 and two in the DSM) and the lack of significant distress or functional impairment as a criterion in the ICD-10 compared to the DSM. In ICD and DSM systems MDD is specified on the basis of the severity of episode as mild, moderate or severe depending on the number of symptoms. For ICD-10, DSM-IV and DSM-5 the exclusion criteria for MDD are hypomanic or manic episodes, symptoms attributable to psychoactive substance use or organic mental disorder. In addition, diagnosis of MDD must not be better explained by schizophrenia, schizoaffective disorder or another psychotic disorder. MDD can present with psychotic features (psychotic depression). In the ICD-10 and DSM-IV, psychotic features are conceptualised on a continuum as form of severe depression. In the DSM-5, psychotic features are separated from severity due to findings that psychotic features do not always correlate with severity of depressive episode (J. Keller, Schatzberg, & Maj, 2007). Diagnostic criteria for non-psychotic MDD went largely unchanged from the DSM-IV to the DSM-5, but in the DSM-5 bereavement-related and non-bereavement-related MDD are not differentiated.
(APA, 2013). According to the DSM-IV, diagnosis of MDD is not made if symptoms are related to the loss of a loved one within the past two months, unless the symptoms include psychomotor retardation, excessive or inappropriate guilt, suicidality, psychotic symptoms, or are associated with a marked decrease in functional capacity.

From here on in this thesis, MDD refers to non-psychotic unipolar depression according to the DSM unless otherwise specified.

Table 1. Diagnostic criteria for major depressive disorder according to ICD-10, DSM-IV and DSM-5

<table>
<thead>
<tr>
<th>ICD-10 (WHO, 1993)</th>
<th>At least one of these, most days, most of the time for at least two weeks:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• persistent sadness or low mood; and/or:</td>
</tr>
<tr>
<td></td>
<td>• loss of interest or pleasure</td>
</tr>
<tr>
<td></td>
<td>• fatigue or low energy</td>
</tr>
</tbody>
</table>

Associated symptoms:
• disturbed sleep
• poor concentration or indecisiveness
• low self-confidence
• poor or increased appetite
• suicidal thoughts or acts
• agitation or slowing of movements
• guilt or self-blame

The 10 symptoms then define the degree of depression and management is based on the particular degree:
• not depressed (fewer than four symptoms)
• mild depression (four symptoms)
• moderate depression (five to six symptoms)
• severe depression (seven or more symptoms, with or without psychotic symptoms)

<table>
<thead>
<tr>
<th>DSM-IV (APA, 1994)</th>
<th>• Depressed mood or a loss of interest or pleasure in daily activities for more than two weeks.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Mood represents a change from the person's baseline.</td>
</tr>
<tr>
<td></td>
<td>• Impaired function: social, occupational, educational.</td>
</tr>
<tr>
<td></td>
<td>• Specific symptoms, at least 5 of these 9, present nearly every day:</td>
</tr>
<tr>
<td>1. Depressed mood or irritability most of the day, nearly every day, as indicated by either subjective report or observation made by others.</td>
<td></td>
</tr>
<tr>
<td>2. Decreased interest or pleasure in most activities, most of each day.</td>
<td></td>
</tr>
<tr>
<td>3. Significant weight change (5%) or change in appetite.</td>
<td></td>
</tr>
<tr>
<td>4. Change in sleep: Insomnia or hypersomnia.</td>
<td></td>
</tr>
<tr>
<td>5. Change in activity: Psychomotor agitation or retardation.</td>
<td></td>
</tr>
<tr>
<td>6. Fatigue or loss of energy.</td>
<td></td>
</tr>
<tr>
<td>7. Guilt/worthlessness: Feelings of worthlessness or excessive or inappropriate guilt</td>
<td></td>
</tr>
<tr>
<td>8. Concentration: diminished ability to think or concentrate, or greater indecisiveness</td>
<td></td>
</tr>
<tr>
<td>9. Suicidality: Thoughts of death or suicide, or has suicide plan</td>
<td></td>
</tr>
</tbody>
</table>
Table 1. (continued)

| DSM-5 (APA, 2013) | Five (or more) of the following symptoms have been present during the same 2-week period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure. |
| | 1. Depressed mood most of the day, nearly every day, as indicated either by subjective report (e.g. feels sad, empty, hopeless) or observation made by others (e.g. appears tearful). |
| | 2. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation.) |
| | 3. Significant weight loss when not dieting, or weight gain (a change of more than 5% of body weight in a month) or decrease or increase in appetite nearly every day. |
| | 4. Insomnia or hypersomnia nearly every day. |
| | 5. Psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down). |
| | 6. Fatigue or loss of energy nearly every day. |
| | 7. Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt at being sick). |
| | 8. Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others). |
| | 9. Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide. |
| | B. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning. |
| | C. The episode is not attributable to the physiological effects of a substance or to another medical condition. |

2.1.2 Definition of chronic depression

The definition of the chronic course of depression differs between diagnostic systems and has been less clearly established than MDD. Currently the terminology used for the persistent course of depression is mixed, and clinically relevant long-lasting depressive symptoms are referred to as chronic depression, persistent depressive disorder (PDD) and dysthymia (or dysthymic disorder).

According to APA (1994; 2000), depressive disorder is classified as chronic if it lasts more than two years. In the DSM-IV, four types of chronic depression are distinguished: chronic major depressive disorder, dysthymia, double depression (i.e. the co-occurrence of major depressive disorder and dysthymia) and recurrent MDD with incomplete recovery between episodes (Klein, 2010). Dysthymia is a diagnosis used in the ICD-10 and the DSM-IV to refer to depressive disorder consisting of the
same cognitive and physical problems as MDD, but with less severe and longer-lasting symptoms. In the ICD-10, the main diagnostic criteria for dysthymia are depressed mood either constantly or recurrently for a minimum of two years, during which periods of normal mood do not last for longer than a few weeks. In addition, few or none of the episodes must not be severe enough to meet the criteria for recurrent mild depressive disorder. To meet the diagnostic criteria for dysthymia according to the DSM-IV, mood must be depressed for most of the day for more than half of the time for two years or more, and two or more of the following symptoms need to be present: change in appetite, insomnia or hypersomnia, low energy, low self-esteem, poor concentration and hopelessness. In addition, the symptoms should cause significant impairment in social, work or other important areas, and symptom-free periods must be no longer than two months.

Accumulating evidence has showed that the four types of chronic depression have more similarities than differences in aetiology and disease course, and it has been argued that there is no meaningful evidence for distinguishing long-lasting MDD and dysthymia (Klein, Shankman, & Rose, 2006; McCullough et al., 2003). Based on epidemiological studies, up to 95% of patients with dysthymia have a lifetime episode of MDD, and around 40% of patients with dysthymia have coexisting MDD (Klein et al., 2006; M. M. Weissman, Leaf, Bruce, & Florio, 1988). Several authors have proposed that long-lasting forms of depression should be diagnostically distinguished from acute depression (Arnow et al., 2003; Rhebergen et al., 2010) and in DSM-5 (APA, 2013), a single diagnostic category of PDD was introduced to discriminate between the acute and persistent course of the depression. DSM-5 distinguishes four potential courses for PDD: 1) MDD that becomes chronic, 2) intermittent MDD with current episode, 3) dysthyemic syndrome, and 4) intermittent MDD without current episode. ICD-10 does not allow for similar coding of persistent depression as DSM-5, and it has been recommended that further revisions of ICD should implement a separate category for chronic depression (Jobst et al., 2016).

In biomedical literature, terms treatment-resistant depression and difficulty-to-treat depression are also used in some cases of persistent depression, typically referring to MDD in which certain number of biological treatments have been non-successful (Nemeroff, 2007; Rush, Thase, & Dubé, 2003; Sackeim, 2001; Souery, Papakostas, & Trivedi, 2006). These terms do not usually specify persistence over a certain time (Jobst et al., 2016) and should be separated from chronic depression, as patients with chronic depression have frequently received inadequate treatment (Kocsis et al., 2008).

Dysthymia and chronic depression are also closely related to the controversial construct of depressive personality disorder (DPD). The inclusion of diagnosis for DPD in diagnostic systems and the relation between DPD and chronic affective disorders has long been debated (Akiskal, 1983; Akiskal, Hirschfeld, & Yerevanian, 1983; Bagby, Ryder, & Schuller, 2003; Huprich, 1998; Kernberg, 1984). In the third
edition of DSM (DSM-III; APA, 1980) a multiaxial diagnostic assessment system was introduced, in which personality disorders were classified as Axis II disorders and distinguished from other mental disorders, or Axis I disorders. According to APA (1980; 1994; 2000; 2013), personality disorders refer to inflexible and enduring maladaptive patterns of behaviour, cognition, and inner experience that cause significant impairment in many areas of life and deviate from culturally accepted norms. Features of personality disorders are commonly seen during an episode of Axis I disorder, and the diagnosis of personality disorder should only be made if the features are characteristic of long-term functioning of the individual and not limited to discrete episodes of mental disorder (APA, 1980; 2000). The multiaxial system has been removed in DSM-5, but the main criteria and types of personality disorders have been retained. DSM-IV and DSM-5 include ten main personality disorders, which can be grouped into three clusters based on descriptive similarities. Cluster A personality disorders are characterised by odd, eccentric thinking or behaviour and include paranoid, schizoid and schizotypal personality disorders. Cluster B personality disorders are characterised by dramatic, overly emotional or unpredictable thinking or behaviour and include antisocial, borderline, histrionic and narcissistic personality disorders. The defining characteristics of cluster C personality disorders are anxious, fearful thinking or behaviour, and this cluster includes avoidant, dependent and obsessive-compulsive personality disorders.

Since DSM-IV, DPD has been included in the appendix of DSM as diagnosis in need for further study, but not regarded as an established psychiatric diagnosis. In the DSM-IV criteria, DPD is characterised by psychological symptoms, such as pervasive pessimism, gloominess, unhappiness and criticalness towards oneself and proneness to feelings of guilt (APA, 1994), whereas criteria for dysthymia and chronic depression are predominantly somatic (Bagby et al., 2003). Although some authors view DPD as being distinct enough from chronic forms of depression or other personality disorders (Akiskal et al., 1983; Hirschfeld, 1994; Kwon et al., 2000; McDermut, Zimmerman, & Chelminski, 2003; Phillips et al., 1998), the diagnostic and construct validity of DPD overlaps markedly with other personality disorders and dysthymia rendering the clinical usefulness of DPD as low (Bagby et al., 2003). Overlap with DPD and other personality disorders has been shown to be nearly 60% (Klein & Shih, 1998; Lyoo, Gunderson, & Phillips, 1998) and descriptive similarities with criteria for borderline personality disorder (BPD) and cluster C personality disorders make differentiating DPD difficult (Bagby et al., 2003). Depending on study, the comorbidity of DPD and dysthymia has ranged from 19% to as high as 95% (Bagby et al., 2003; Hirschfeld, 1994; McDermut et al., 2003; Phillips et al., 1998), and particularly in patients with MDD there is marked difficulty in differentiating the diagnosis accurately (Bagby et al., 2003).
In this thesis, the term chronic depression is used as a general term for depressive disorders with a persistence course covering both long-standing MDD and dysthymia according to DSM-IV unless otherwise specified. This choice is primarily made because diagnostic assessment in original studies in this thesis is based on the DSM-IV diagnostic system, which does not include the diagnosis of PDD. In original studies chronic depression definition is based on illness duration as an episode of MDD lasting at least two years and/or dysthymia. Secondly, the term chronic depression is used because the majority of previous research has been done before DSM-5 and therefore the term PDD has been less used and is not as well established. In the future, however, one term should be used consistently in research and clinical practice (Jobst et al., 2016).

2.1.3 Prevalence and trajectory of depressive disorders

Globally, the 12-month prevalence for MDD is around 5–6% (Bromet et al., 2011; Ferrari et al., 2013a), but significant variation exists between countries and regions. In 2015, point-prevalence for depressive disorders ranged from 2.5% among males in the Western Pacific region to 5.9% among females in Africa (WHO, 2017). In the WHO World Mental Health Survey, the 12-month prevalence for MDD ranged from 2.2% in Japan to 10.4% in Brazil (Bromet et al., 2011). In Finland, the 12-month prevalence for depressive disorders has been reported as 6.5%, being 4.5% among males and 8.2% in females (Pirkola et al., 2005). Accurate population prevalence estimates for chronic depression are less freely available due to varying definitions. In an Australian nationally representative household survey, the lifetime prevalence of chronic depression as defined in DSM-5 was 4.6% (Murphy & Byrne, 2012). In the United States, the 12-month prevalence of depressive symptoms lasting more than two years was reported to be 1.5%, and lifetime prevalence estimates ranged from 3 to 6% (Blanco et al., 2010; Satyanarayana, Enns, Cox, & Sareen, 2009). For dysthymia, period prevalence estimates have been reported as 1.6% (Charlson, Ferrari, Flaxman, & Whiteford, 2013).

Approximately one in six people in high-income countries suffer an episode of major depression during their lifetime (Bromet et al., 2011), and the 12-month incidence for depressive disorders is around 3% (Ferrari et al., 2013a). Population studies show that a depressive episode typically lasts from 13 to 30 weeks and 70–90% of individuals recover from MDD in a year (M. B. Keller et al., 1992; Spijker et al., 2002). However, depressive disorders are not uniformly distributed in the population and tend to cluster in the same individuals (Nanni, Uher, & Danese, 2012). Some 60% of individuals who have recovered from a depressive episode will have a recurrence within five years (Solomon et al., 2000), and 20–30% of individuals with MDD develop a chronic course (Angst et al., 2009; Murphy & Byrne, 2012; Torpey & Klein,
In an 11-year follow-up study using a representative Finnish population sample, around 25% of those diagnosed with depressive disorders at baseline were still diagnosed with MDD or dysthymia in the follow-up (Markkula et al., 2016). In outpatient studies, more than half of patients with MDD still meet the diagnostic criteria for MDD after two years and only 25% recover in six months (Penninx et al., 2011; Wells, Burnam, Rogers, Hays, & Camp, 1992).

2.1.4 Typical correlates and the burden of depressive disorders

Although the prevalence of MDD varies across countries, age of onset, severity and the sociodemographic and environmental correlates of MDD are largely similar worldwide (Bromet et al., 2011; Kendler et al., 2015; Kessler & Bromet, 2013). MDD occurs approximately twice as often in women as in men (Seedat et al., 2009). The recurrence or duration of a depressive episode or treatment response does not substantially differ depending on gender (Penninx et al., 2011). MDD can occur over the life span, but the median age of onset is around 25 years (Bromet et al., 2011). The highest risk period for the development of MDD ranges from mid-adolescence to the early 40s (Bromet et al., 2011), and at least in high-income countries the prevalence of depression declines after early adulthood (Kessler & Bromet, 2013). Accordingly, the main reason for global rise in the number of people with depressive disorders appears to be the growing population and subsequently the increase in the number of individuals living to the age when depression most commonly occurs (WHO, 2017).

Depressive disorders have a major impact on social, cognitive and occupational functioning and quality of life. Among the most consistently reported environmental and social factors associated with MDD are the absence of a partner, low education and socioeconomic status and lack of social support (George, Blazer, Hughes, & Fowler, 1989; Lorant et al., 2003; Lorant et al., 2007). Several negative life-style factors correlate with MDD, including alcohol use and smoking, unhealthy dietary patterns and low physical activity (Akbaraly et al., 2009; Aneshensel & Huba, 1983; Lopresti, Hood, & Drummond, 2013; Wilhelm, Mitchell, Slade, Brownhill, & Andrews, 2003). Patients with MDD have shown poorer performance than healthy controls in neurocognitive tasks, including impairments in memory, attention and executive functioning (R. Lee, Hermens, Porter, & Redoblado-Hodge, 2011; Rock, Roiser, Riedel, & Blackwell, 2014). Impaired neurocognitive performance associates with lower psychosocial functioning in MDD patients (Evans, Iverson, Yatham, & Lam, 2014). Reduced overall functioning is also evident from reduced or lost ability to work. In the United States, MDD caused on average 27.2 lost workdays per ill worker per year (Kessler et al., 2006) and, for instance, in Finland MDD is among the leading causes of disability pensions (Finnish Centre for Pensions, 2017).
MDD also associates with an increased risk of other diseases, including cardiovascular diseases and diabetes (Hare, Toukhsati, Johansson, & Jaarsma, 2014; Nemeroff & Goldschmidt-Clermont, 2012), which further increases the disease burden of MDD. Patients with MDD have increased mortality rates: based on a meta-review, Chesney, Goodwin and Fazel (2014) estimated that the lost life years in patients with MDD is 10.6 for men and 7.2 for women, and one of the key factors associated with lost life years is the rate of suicide in MDD patients. Suicidality associated with depression is discussed further in section 2.1.7.

2.1.5 Development of depressive disorders

Depressive disorders are pleomorphic, and no single mechanism can fully explain the development of depression (Otte et al., 2016). Genetic, biological, social and psychological factors have an influence on the emergence of depression, and these factors are intertwined. The development of depression is commonly conceptualised as interaction between different risk or vulnerability factors and triggering events, which contribute to individual susceptibility to depression (Disner, Beevers, Haigh, & Beck, 2011; Kupfer, Frank, & Phillips, 2012).

The genetic contribution to MDD is substantial. The heritability estimate for MDD is approximately 35% (Geschwind & Flint, 2015) and there are genetic similarities between other psychiatric disorders, such as bipolar disorder and schizophrenia (Smoller et al., 2013). The genetic risk of MDD involves several genes with small effects, and gene-environment interaction is an important part of risk for development of MDD (Otte et al., 2016). The genetic contribution to depression is also evident from the fact that certain temperament and personality traits, such as neuroticism or negative emotionality and conscientiousness, are linked to the development of depression (Klein, Kotov, & Bufferd, 2011). The heterogeneity of depressive disorders makes it difficult to determine whether the importance of temperament and personality factors differs depending on the course of the disorder, but these factors may have an especially pronounced role in early-onset, recurrent and chronic depression (Klein et al., 2011).

Environmental stressors associated with the development of depressive disorders include both recent adverse events in life (Kessler, 1997) and exposure to early traumatization. Recent stressful life-events, for instance unemployment, financial difficulties or bereavement, are commonly reported before an episode of MDD (Kessler, 1997). Early life stress and traumatic events in childhood, such as abuse, neglect and loss are significant distal risk factors in developing depression in adulthood. According to a review by Heim and Binder (2012), childhood traumas more than double the risk of developing MDD. Importantly, meta-analytic evidence shows a dose-response relationship between the severity and number of adverse or traumatic life
events and risk, severity and chronicity of MDD (Li, D’Arcy, & Meng, 2016). In addition to traumatic events, factors such as poverty, poor health status and other medical illnesses increase the risk of developing MDD (Cole & Dendukuri, 2003; George et al., 1989). Overall, the relationship between environmental or social factors and depression is bidirectional. For instance, low societal status can contribute to the development of MDD, but on the other hand MDD, and particularly chronic depression, can cause social drift through decreasing social functioning which may in turn lead to a lower income and problems in social relationships (King et al., 2008; Otte et al., 2016; Patel et al., 2016).

One of the early biological models for the pathophysiological basis of depression was the monoamine hypothesis, in which depression was thought to be caused by a depletion in the levels of the neurotransmitters serotonin, dopamine and/or noradrenaline (Delgado, 2000). Current biological evidence points to more complex mechanisms (Otte et al., 2016). In later biological models the importance of disturbances in the neurobiological stress-responsive systems, alterations in regional brain volumes and functional changes in brain circuits have been highlighted as potential mechanisms for the development of MDD (Otte et al., 2016). The hypothalamus-pituitary-adrenal gland (HPA) axis is one of the best researched biological systems in MDD, and one potential mechanism for development of MDD is that prolonged stress causes depression through the hyperactivation of the HPA axis (Varghese & Brown, 2001). It has been well established that cortisol levels in MDD patients are increased and alterations in HPA axis correlate with impaired cognitive functioning in individuals with MDD (Hinkelmann et al., 2009; Stetler & Miller, 2011). Although to date, no new treatment forms targeting HPA axis in MDD have emerged, it is possible that deeper phenotyping of MDD could lead to the identification of a subcategory of patients who might benefit from treatment within the HPA axis (Otte et al., 2016).

The role of low-grade inflammation and the immune system also appears to be relevant for the development of MDD. MDD patients have increased serum levels of pro-inflammatory cytokines (Dowlati et al., 2010; Elomaa et al., 2010), and population-based research has shown that severe infections and autoimmune diseases increase the risk of later MDD (Benros et al., 2013). Stress-associated alterations in inflammatory and glucocorticoid signalling are associated with corresponding changes in multiple brain networks (Otte et al., 2016). In neuroimaging studies, abnormalities in activation or connectivity have been shown within the affective-salience circuit, the medial prefrontal-medial parietal default mode network and the frontoparietal cognitive control circuit (Otte et al., 2016). Out of the structural brain alterations in MDD patients, reduced hippocampal volume has been most consistently replicated, but findings in the basal ganglia, thalamus and other regions have also been reported (Kempton et al., 2011; Schmaal et al., 2016). Whether structural alterations precede
the development of MDD or develop in the course of the disorder is still unclear (Otte et al., 2016).

There are several psychological conceptualisations for the aetiology of depression with different theoretical backgrounds (Beck, 1979; Freud, 1964; McCullough, 2003; Seligman, 1975). Cognitive models of depression are perhaps the dominant contemporary theories on vulnerability to depression (Beck, 1979; Seligman, 1975). Cognitive models present depression as a product of biases and distortions in thinking, and it is viewed that there are differences in how individuals understand and interpret their experiences, which contribute to the individual predisposition to depression (Clark & Guyitt, 2016). According to cognitive models, some individuals are characterised by a vulnerable cognitive style in which circumstances and events are interpreted in a self-critical and negative manner, and under stressful situations these dysfunctional styles lead to unhelpful thinking patterns and eventually to the development of MDD (Clark & Beck, 1999). In line with the basic assumptions of the cognitive diathesis-stress model for depression, prospective studies have shown that a negative thinking style increases the risk of later development of depression (Alloy, Abramson, Smith, Gibb, & Neeren, 2006). The development of depressogenic cognitive styles associates with other established risk factors of depression and involves genetic, personality (Neiss, Sedikides, & Stevenson, 2006) and environmental (Alloy et al., 2006) components. In general, cognitive factors have been most extensively explored in relation to the onset or recurrence of depression and how cognitive factors relate to the persistent course of depression is less well established (Riso et al., 2003). Cognitive models of depression and components of models in relation to depression and psychopathology are discussed further in section 2.2.

2.1.6 Psychiatric comorbidity

Depressive disorders frequently co-occur with other mental disorders and the majority of individuals with MDD have a comorbid disorder. Comorbid mental disorders are associated with a poorer treatment response and increased disability in patients with MDD (Durbin, Klein, & Schwartz, 2000; Hayden & Klein, 2001; Kocsis, 2003; Thase, 2006). According to a large-scale US study, 72.1% of individuals with lifetime MDD met the criteria for at least one DSM-IV disorder, and 64% of individuals with MDD over the past year had comorbid mental disorder (Kessler et al., 2003). Most frequent comorbid mental disorders include anxiety disorders, substance abuse and personality disorders (Alonso et al., 2004; Kessler et al., 2003; Melartin et al., 2002; Merikangas et al., 2003).

Psychiatric comorbidity is markedly more common in chronic depression (Angst et al., 2009; Hayden & Klein, 2001). Compared to episodic MDD, chronically depressed individuals are twice as likely to have a comorbid personality disorder,
particularly cluster B (borderline or antisocial) and cluster C (avoidant or obsessive-compulsive) personality disorders (Klein, 2008; Rothschild & Zimmerman, 2002), and also show higher rates of comorbid anxiety and substance abuse disorders than patients with episodic MDD (Angst et al., 2009; Gilmer et al., 2005; Hölzel, Härter, Reese, & Kriston, 2010). In longitudinal studies, comorbid cluster B and C personality disorder have been consistently linked with poor treatment outcomes in chronic depression (Hayden & Klein, 2001; Klein et al., 2006; Viinamäki et al., 2003).

2.1.7 Suicidality and depression

One of the leading concerns in depressive disorders is their close relationship with suicide attempts and completed suicides. According to WHO (2016), there are 800,000 suicides per year globally, and around 50% of these occur within a depressive episode. Based on meta-analytic studies, the two single most common diagnostic categories among suicide completers are affective disorders (diagnosed in 43.2% of suicide cases) and substance disorders (present in 25.7% of suicide cases), and individuals with MDD have nearly a 20-fold risk of suicide compared to the general population (Arsenault-Lapierre, Kim, & Turecki, 2004; Chesney et al., 2014).

Suicidality can be understood as a continuum of self-destructive behaviours, i.e. suicidal ideation, self-harming behaviour, suicide attempts and completed suicide, which have overlapping risk factors (Batterham et al., 2015; Beck, Beck, & Kovacs, 1975; Beck, Weissman, Lester, & Trexler, 1976; Diekstra & Garnefski, 1995). The lifetime cross-national prevalence estimates for suicidal ideation, suicide plans and attempts have been reported as 9.2%, 3.2% and 2.1%, respectively (Nock et al., 2008), but, for instance, in a Finnish sample of patients with MDD, suicidal ideation was reported by 58% and 95% out of MDD patients who attempted suicide had prior suicide ideation (Sokero et al., 2003). In many cases of MDD suicide ideation tends to be persistent (Sokero et al., 2003) and the more chronic the course of MDD is, the more likely an attempt of suicide is to happen (Torpey & Klein, 2008).

Current evidence for accurate and powerful risk factors of suicidality is limited (Franklin et al., 2017). In addition to depression and other mental disorders, the most commonly reported risk factors for suicidal behaviour include negative life events, low social support and living alone (Nock et al., 2008). From psychological factors, hopelessness, i.e. negative attitudes to the future, is among the key contributors to suicidal behaviour. In prospective studies, the severity of hopelessness has been shown to be sensitive, but not a specific predictor of eventual suicide in psychiatric patients, including patients with MDD (Beck, Steer, Kovacs, & Garrison, 1985; Beck, Brown, Berchick, Stewart, & Steer, 1990).

Severity of depressive symptoms and hopelessness are the best-established predictors of suicidal thoughts in MDD, as well as in other mental disorders (Ando et
al., 2013; Hintikka et al., 1998; Sokero et al., 2003) and from a clinical perspective addressing depressive symptoms is among the key factors in preventing suicidality in MDD. However, two recent meta-analyses on randomised controlled trials (RCTs) of antidepressant medication showed no evidence that the suicide risk in MDD reduces during antidepressant medication alone (Braun, Bschor, Franklin, & Baethge, 2016; Sharma, Guski, Freund, & Gøtzsche, 2016), and it appears that interventions targeting suicidal thoughts are important preventive measures (Meerwijk et al., 2016). For instance, certain cognitive distortions and biases have been highlighted as being a relevant point of intervention (T. E. Ellis, 2006; Jager-Hyman et al., 2014). In a study among suicide attempters, it was shown that catastrophic thinking differentiated those who had attempted suicide from psychiatric controls regardless of depressive symptoms (Jager-Hyman et al., 2014), which supports notions that targeting directly suicidal thinking might have additive benefits over the treatment of depression alone.

2.1.8 Treatment of depressive disorders

The two main treatment options in MDD are pharmacotherapy and psychotherapy. Recommended treatment across treatment guidelines for the acute phase in mild and moderate MDD include either psychotherapy, antidepressant medication or a combination of both, whereas medication is recommended as a first line treatment in severe and psychotic depression (Cleare et al., 2015; Gelenberg, 2010; Isometsä et al., 2015; Isometsä et al., 2009). In severe and psychotic depression, electroconvulsive therapy (ECT) can be used if pharmacotherapy has not been successful or a rapid treatment response is needed, for instance due to an acute risk of suicide (Isometsä et al., 2015; Otte et al., 2016). There are also several other treatment options including technology-based self-management programmes, exercise and newly emerging forms of treatment such as repetitive or deep transcranial magnetic stimulation (rTMS, dTMS), transcranial direct current stimulation (tDCS), vagus nerve stimulation (VNS) and use of ketamine or esketamine (Otte et al., 2016).

The effectiveness of antidepressant medication in reducing the severity of depressive symptoms and achieving remission is well established (Fournier et al., 2010). Commonly used medications include tricyclic antidepressants (TCAs), selective serotonin reuptake inhibitors (SSRIs) and serotonin-noradrenaline reuptake inhibitors (SNRIs). The antidepressant treatment of MDD is divided into the acute phase (aiming at full remission), the continuation phase (aiming to prevent relapse) and the maintenance phase (aiming for a prevention of recurrence). Antidepressant medication is recommended to be used for six months after remission, and long-term use of antidepressant medication is recommended for patients who have recurrent depressive episodes (Cleare et al., 2015). Similarly, the effectiveness of psychotherapy in
MDD is unequivocal, and various psychotherapeutic approaches can successfully be used in the treatment (Cuijpers et al., 2013; Cuijpers, van Straten, Andersson, & van Oppen, 2008). Commonly used psychotherapies for MDD include cognitive-behavioural therapy (CBT) or cognitive therapy (CT), psychodynamic therapy, interpersonal therapy and mindfulness-based therapy (Otte et al., 2016).

The effectiveness of psychotherapy and pharmacotherapy are largely equivalent in MDD in terms of treatment response, reducing severity of depression and remission rates (Amick et al., 2015; Weitz et al., 2015). Typical treatment response rates in MDD are around 50-60% in either psychotherapy or pharmacotherapy (Hollon et al., 2005; Rush et al., 2006) and combining psychotherapy and pharmacotherapy results in significantly better outcomes than either treatment alone (Cuijpers, van Straten, Warmerdam, & Andersson, 2009). CT has shown equal performance in lowering relapse rates one year after ending the treatment compared to continuation of antidepressant medications (30.8% vs 47.2%) and both psychotherapy and the continuation-phase of antidepressants result in significantly lower relapse rates than in patients who are withdrawn from medications (Hollon et al. 2005).

Antidepressant medication and psychotherapy are effective in the treatment of chronic depression (Jobst et al., 2016), but remission rates for medication are commonly below 50% and effect sizes of psychotherapy in symptom reduction are smaller than in non-chronic depression (Cuijpers et al., 2010; Kocsis, 2003). EPA recommends a combination of psychotherapy and pharmacotherapy as the primary alternative for chronic depression due to better response and remission rates of combination treatments, but, if the patient prefers monotherapy, either one can be recommended (Jobst et al., 2016). In chronic depression, continuation and maintenance of antidepressant treatments are necessary to reduce relapse and recurrences (Jobst et al., 2016). Currently preferred choices of psychotherapies for chronic depression are cognitive behavioural analysis system of psychotherapy (CBASP) and interpersonal psychotherapy, and psychotherapy should be offered frequently and over a longer time than in episodic MDD (Jobst et al., 2016). CBASP combines elements from CBT with interpersonal and psychodynamic strategies (McCullough, 2003) and it is currently the only treatment that has been specifically tailored for early-onset chronic depression (Jobst et al., 2016). In CBASP framework, early interpersonal trauma is assumed to result in dysfunctional mechanisms of affective and motivational regulation and low perceived functionality (McCullough, 2003). Therefore, CBASP has a specific focus on the interpersonal outcome and the aim of therapy is to develop interpersonal awareness, empathy and goal-oriented favourable behaviour in chronically depressed patients (Jobst et al., 2016). The EPA guidance paper on psychotherapy for chronic depression presents that, in the management of chronic depression, more tailored psychotherapeutic options should be developed and offered due to high comorbidity of personality disorders and frequent histories of traumatic events in chronically depressed patients (Jobst et al., 2016).
2.2 SCHEMA MODEL

2.2.1 The concept of schema in the age of psychotherapy integration

According to Edwards and Arntz (2012), an ongoing widespread movement towards integration of concepts and formulations across different forms and traditions of psychotherapy has taken place in recent decades. Examples of this integration of theories, concepts and methods include treatment approaches such as cognitive analytical therapy (Ryle, 1997), dialectical behaviour therapy (Linehan, 1993), compassion-focused therapy (Gilbert, 2005) and schema therapy (Young et al., 2003).

One point of convergence between different approaches and theories, particularly for cognitive and psychodynamic traditions in psychotherapy, has been the concept of schema. Schema has been coined as a general term for underlying cognitive structures which individuals use in abstracting and generalizing from personal experience and which subsequently contribute to the development of psychopathology and psychological distress (Edwards & Arntz, 2012; Horowitz, 1988; James, Southam, & Blackburn, 2004). However, in the field of clinical psychology and psychotherapy the use of the schema concept appears mercurial in nature (James et al., 2004). There is a myriad of terms, which are frequently used interchangeably to describe similar concepts with different theoretical and practical emphasis (Beck, Davis, & Freeman, 2004; Horowitz, 1991; Safran, 1990; Young, 1990). In addition to psychology and psychotherapy, the term has also been used in a number of ways in several other disciplines, including philosophy, neurology, computer science and education (Head, 1920; Holmes & Spence, 2004; Neisser, 1966; Rafaeli, Bernstein, & Young, 2011). The following chapter gives a brief historical overview of the use and development of the schema concept in the subdisciplines of psychology, followed by an overview of schema in clinical psychology with a special focus on the psychotherapy of depression and personality disorders before taking a detailed look at Young’s schema model and its titular concept, EMS.

2.2.2 Overview of the historical basis of the schema concept

The word schema (pl. schemas or schemata) originates from the Greek word σχήμα, literally meaning “shape” or “plan”. The roots of the schema concept are commonly dated back to Kantian philosophy and Immanuel Kant’s writings on the possibility of valid knowledge (Stein, 1992). Kant used the concept of schema in an effort to overcome the incompatibility of views between the empiricists, who argued that knowledge has its origins in the external world and therefore sense experiences provide knowledge, and the rationalists, who argued that knowledge has its origins in
the process of reason and is the product of the mind. Kant saw schema as a representation of a universal procedure of the imagination which provides an image for a concept and argued that schemas interdigitate between properties of the mind and raw sensory data (Stein, 1992). The Kantian schema concept has been defined in more contemporary terms by Stein (1992) as: “mental schemas are activated by the external world, and simultaneously provide an interpretation of it”.

There is a long and parallel history in psychology for the use of schema concept. In cognitive psychology schema has been used to refer to that portion of the entire perceptual cycle, which is internal to the perceiver, is modified by experience and specific to what is being perceived (Neisser, 1966). In this context, schemas act as formats, which specify types of information that can be interpreted, and plans, which guide and determine what is perceived (Neisser, 1966; Neisser, 1976). Bartlett (1932) first introduced the concept of schema in cognitive psychology as a central cognitive structure for his findings on distortions in perception when individuals recall narratives. For Bartlett schemas were a component of memory, which emerge through interaction with the environment and subsequently organize information in specific ways (Stein, 1992). Among the most well-known psychological theories utilizing the schema concept is Piaget’s theory of genetic epistemology. Piaget (1952; 1972) argued that children perceive and interpret what they experience through the process of assimilation and accommodation to create a schema, or a mental framework (Neisser, 1976; Pace, 1988).

The role of schemas has also been noted in psychological theories of personality development. Kant scholar Hans Vaihinger (1911/1920) proposed that the individual’s schematic model of reality is different from reality itself, which had subsequent importance for the phenomenological theories of personality and individual psychology by Adler (1927). According to Adler (1930) subjective views of the world, schemas of apperception, are the basis of individual personality. Similarly, George Kelly’s (1955) personal construct psychology utilized a phenomenological approach to the schematic processing of social information and personality development. Kelly referred to his theory as one of constructive alternativism, and saw that individuals act like scientists who see the world based on uniquely organized systems of construction, which in turn influence how events are anticipated.

2.2.3 Schema in clinical psychology and psychotherapy – Beck’s model

By the 1970s, multidisciplinary focus on the scientific study of human information processing and cognition, the so-called cognitive revolution, became increasingly prominent in clinical psychology and psychotherapy due to Aaron T. Beck’s cognitive model for depression and psychopathology (Beck, 1964; Beck, 1967; Beck, 1976; Beck, 1979). Beck’s information-processing model of psychopathology is based on a
view that individual’s cognitive, emotional and behavioural responses to events are automatically affected by constant perception interpretation, recall and storage of data from the environment and that this process is prone to biases, distortions and defects (Pretzer & Beck, 2005). Influenced by Albert Ellis’ (1962) theory of emotions as self-evaluative beliefs, in Beck’s diathesis-stress model for the aetiology of depression mood alternation is not placed at the centre of depressive disorders. Beck viewed self-castigation, exaggeration of external problems and hopelessness as the key symptoms of depression, which in turn would lead to dysphoria, passivity and reduced desire (Beck, 1967; Kovacs & Beck, 1978). Schemas were noted in the model as a central cognitive structure together with the negative triad (negative views about self, others and the world) and cognitive errors.

In traditional accounts of cognitive theory, cognitive systems are commonly viewed from a hierarchical perspective with automatic thoughts at the most superficial level, dysfunctional attitudes at an intermediate level, and cognitive schemas at the deepest, implicit or non-accessible level (Clark & Beck, 1999; Segal, 1988). In Beck’s (1964) formulation, the negative triad is incorporated in negative self-schemas, which constitute the vulnerability to depression. Schema was defined by Beck (1967, p. 283) as:

“a structure for screening, coding, and evaluating the stimuli that impinge on the organism. It is the mode by which the environment is broken down and organized into its many psychologically relevant facets. On the basis of the matrix of schemas, the individual is able to orient himself in relation to time and space and to categorize and interpret his experiences in a meaningful way”

In this sense, the Beckian schema is both a deep structure of memory, which organizes the individual’s experience, and a concept that can be used to explain why different individuals react differently to the same situation, or why a single individual shows a similar response across a variety of apparently dissimilar events. Subsequent development of Beck’s model of depression placed greater emphasis on the origins and nature of schemas. Kovacs and Beck (1978) described schemas as latent and relatively enduring building blocks of personality and hypothesized that schemas are formed or acquired early in development. In Beck’s model, schemas relevant to depression are maladaptive cognitive structures involving immature “either-or” rules of conduct and inflexible or unattainable self-expectations (Kovacs & Beck, 1978). According to Beck’s model, if these schemas are uncritically carried into adulthood, the schema activates in stressful situations, which leads to cognitive biases and subsequently to symptoms of depression.

Despite schemas playing a significant conceptual role in Beck’s model, cognitive theory and cognitive therapy of depression initially placed greater emphasis on other aspects of the model, such as the role of negative automatic thoughts or cognitive
distortions (Clark & Beck, 1999; Edwards & Arntz, 2012; Pretzer & Beck, 2005). The role and nature of schemas in Beck’s model also received criticism for issues relating to ambiguous formulations of the effects of schemas in individuals’ thinking, problems in assessing schemas and the overall testability of the model (Segal, 1988; Segal & Swallow, 1994). Towards the 1990s several cognitively oriented approaches (sometimes referred to as “post-rationalist” and “constructivist”) were developed as alternative adaptations of the cognitive model for personality disorders (Safran, 1990; Young, 1990) and many authors started to emphasise the role of developmental factors and deeper schema levels of cognition in their modifications of cognitive therapy (Perris, 2000).

Based on criticism and a growing interest in adapting cognitive model to personality disorders (Clark & Beck, 1999; Pretzer & Beck, 2005), Beck and co-workers have over the years revised the concept of schema in cognitive theory. The influence of work by Kant, Bartlett, Piaget, Kelly and Adler together for instance with cognitive and cognitive-behavioural perspectives of Mahoney (1974) and Lazarus (1966) as well as social learning theory (Bandura, 1977) are present in Beck’s model (Edwards & Arntz, 2012; Pretzer & Beck, 2005). In the contemporary cognitive model, schemas are considered as the basis of personality and personality pathology (Clark & Guyitt, 2016; Pretzer & Beck, 2005; Salkovskis, 1996). Personality is viewed in the model as interaction between 1) cognitive schemas, which process information and assign meaning; 2) affective schemas, which generate feelings; 3) motivational and behavioural schemas, which prepare or inhibit action, and 4) physiological schemas, referring to the role of motor and sensory systems and the autonomic nervous system (Pretzer & Beck, 2005). Other notable modifications to the schema concept have included introductions of core beliefs as cognitive content and verbal representation of cognitive schemas (Clark & Guyitt, 2016) and the concept of mode, which moves beyond the idea of a hierarchical structure of cognitive systems and assumes a parallel relationship between different cognitive structures (Beck et al., 2004).

As mentioned earlier, schemas are widely used concepts in modern psychotherapy. However, different theoretical roots and the ubiquitous use of the schema concept have led to much confusion (James et al., 2004). In addition to schemas and core beliefs, terms such as interpersonal schemas (Safran, 1990), person and self-schemas (Horowitz, 1991; Segal, 1988), EMSs (Young, 1990; Young et al., 2003), and unconditional beliefs and dysfunctional attitudes (A. N. Weissman & Beck, 1978) have been used to refer to various cognitive systems, which are viewed as sometimes developmental and sometimes state-related in relation to psychopathology. As several authors use similar cognitively oriented terminology in relation to psychological distress, James et al. (2004) propose that, in order to understand and compare these concepts, it is necessary to consider the following assumptions when referring to any deeper level of cognitions:
To clarify the use of schema in clinical psychology and psychotherapy, James et al. (2004) have developed a tripartite definition of schema and related cognitive structures. In their view, schemas are best understood as a parent concept that comprise, as in Bartlett's and Piaget's view, the building blocks of a long-term memory system, i.e. specific networks of information about some aspect of the individual's world and that can be activated consciously or unconsciously. For James et al. (2004), a second level of schemas comprises core beliefs. In this sense, core beliefs refer to a sub-component of schemas that are brought into conscious awareness through reflection, i.e. are verbal presentations of a certain schema. At a third level of their definition, James et al. (2004) note self-referent beliefs, which refer to specific types of core-beliefs in which the individual evaluates self in relation to the world and to the future. To summarise, James et al. (2004) consider that the concept of schema should be used to refer to multi-component processing units, and that a clear definition and differentiation between schemas, core beliefs and self-referent beliefs would be beneficial for research, assessment and the treatment of psychological distress.

2.2.4 Young's schema model

In 1990, Jeffrey Young, a one-time student and co-worker of Beck, introduced what was then called a schema-focused approach to cognitive therapy as an extension of CT for patients with characterological problems. Young thought that patients with personality disorders and chronic psychological problems were a poor match for traditional CT, and that these patients would need a more extensive approach that considers the developmental origins of long-term psychological difficulties (Young et al., 2003). Young and colleagues later developed the schema-focused approach to an integrative form of psychotherapy, schema therapy, which is described in the manual ‘Schema therapy: A practitioner's guide’ (Young et al., 2003).

As a form of psychotherapy, schema therapy is an integrative approach combining psychoanalytic object relations theory and experimental techniques in a cognitive-behavioural framework (Young et al., 2003). The effectiveness of schema therapy in personality disorders has been studied among patients with borderline, cluster C, paranoid, histrionic and narcissistic personality disorders in both individual and group formats. Currently, the evidence-base for schema therapy is strongest for treatment of BPD (Sempertegui et al., 2013) and cluster C personality disorders.
(Hopwood & Thomas, 2014; Stoffers et al., 2012). In a trial among patients with BPD, three years of schema therapy was superior to transference-based psychotherapy in the reduction of personality disorder symptoms and general psychopathology and in improving quality of life (Giesen-Bloo et al., 2006). Group-form schema therapy for BPD showed greater symptomatic relief compared to treatment as usual (Farrell, Shaw, & Webber, 2009) and in a multicentre RCT, schema therapy showed greater recovery to treatment as usual in patients with cluster C, paranoid, histrionic, or narcissistic personality disorder (Bamelis, Evers, Spinhoven, & Arntz, 2014). Overall, the number of trials is still relatively limited, and some trials have been critiqued based on the used control conditions and analysis methods (Pearce, 2007; Yeomans, 2007).

The main theoretical underpinnings of Young’s model are the Beckian cognitive model, post-rationalist constructivist theory (Guidano & Liotti, 1983; Guidano, 1991) and attachment theory of the British object relations school, including work by Bowlby, Ainsworth, Mahler and Winnicott (Rafaeli et al. 2010). Young’s schema model is based on an understanding that all individuals have a set of universal core emotional needs and that psychological health is the ability to have one’s needs met in an adaptive manner (Rafaeli et al., 2010). Based on Bowlby (1969), core emotional needs in the schema model include: 1) secure attachments to others (i.e. safety, stability, nurturance and acceptance), 2) autonomy, competence and sense of identity, 3) freedom to express valid needs and emotions, 4) spontaneity and play, and 5) realistic limits and self-control (Young et al., 2003).

Central concepts of the schema model and their relations are illustrated in Figure 1. In Young’s view, interaction between a child’s biological temperament and early adverse experiences result in an unsatisfactory completion of developmental needs leading to personality pathology and chronic psychological problems through the development of EMSs. Young and colleagues (2003) describe 18 empirically derived EMSs, which are grouped under five broad umbrella categories based on corresponding unmet needs and need-thwarting experiences. Taxonomy and assessment of EMSs are presented in section 2.2.5. Young et al. (2003, p.7) define EMSs as trait-like, persistent self-defeating emotional and cognitive patterns, which are:

- broad and pervasive themes regarding oneself and one’s relationship with others
- comprised of memories, cognitions, emotions and bodily sensations developed during childhood or adolescence and elaborated throughout lifetime
- dysfunctional to a significant degree
It is noteworthy that EMSs, although referred to as schemas, best fit in the definition by James et al. (2004) under the third level of schema concept as self-referent beliefs, because EMSs are perceptions of the self and the self in relation to others. Young’s model assumes that EMSs, similarly to the core needs, are universal. Development of EMSs represents a necessary adaptation to negative experiences and unfulfilled needs during early life. However, as EMSs function as a filter through which the world is interpreted and predicted, patterns that have initially had an adaptive function in relation to unmet needs in childhood may become maladaptive later in life (Young et al., 2003). As such, EMSs have significant conceptual overlap with internal working models of attachment theory (Platts, Tyson, & Mason, 2002; Platts, Mason, & Tyson, 2005).

EMSs are thought to become inaccurate and strongly held by adulthood, but, as they form and develop at an early stage, they are frequently not in the person’s conscious awareness (Farrell, Reiss, & Shaw, 2014). The schema model presumes that EMSs are maintained because individuals use automatic and unconscious coping styles when encountering situations that trigger underlying EMSs and the intensity, dysfunctionality and trigger activity vary depending on individual psychological vulnerability. EMS can be triggered by certain emotions, encounters or situations that resemble ones that individual has experienced earlier in life. The three major forms of coping are avoidance, where individuals avoid activities that trigger EMSs; surrendering, where individuals give in to EMS and adapt to it; and overcompensation, where individuals behave in the opposite direction of the EMS in
order not to be bothered by it (van Genderen, Rijkeboer, & Arntz, 2015). Coping styles are thought to develop during childhood, when they might have been adaptive methods for dealing with threatening situations, but, in later life, they serve to maintain maladaptive schemas (Young et al. 2003).

The final central concept for the schema model is the schema mode. While EMSs refer to the trait-like characteristics of a person, modes are continuously changing dominant states of mind, which are activated by the current emotional state and coping styles (Young et al., 2003). Modes can be understood in social-cognitive terms as the part of person’s self which is primed or activate at the moment, and from therapeutic viewpoint, modes are often considered the main focus of treatment through which alleviation of EMSs becomes possible (Rafaeli et al., 2010).

2.2.5 Taxonomy and assessment of early maladaptive schemas and schema domains

Among the most significant differences between EMSs and cognitive structures in traditional accounts of cognitive theory are the accessibility and specificity of EMSs. While schemas are frequently viewed as implicit (Segal, 1988), Young et al. (2003) view that EMSs reside at closer proximity to the level of consciousness and are therefore considered accessible. EMSs are assessed using self-report inventories and therefore resemble the concept of core beliefs in cognitive theory (Clark & Beck, 1999). However, whereas core beliefs are commonly divided into three broad categories (helplessness, inadequacy and unlovability), Young’s model details 18 EMSs grouped into five domains according to corresponding need-thwarting experiences. EMSs are assessed using the Young Schema Questionnaire (YSQ), which is used to conceptualise current problematic patterns related to individual’s psychological problems. Taxonomy of EMSs was originally derived from clinical observations and in the schema therapy manual Young et al. (2003) lay out heuristics for certain personality disorders and typically corresponding EMSs. Taxonomy of schema domains and EMSs with brief descriptions and proposed theoretical origins are presented in Table 2.
Table 2. Taxonomy of early maladaptive schemas and schema domains by Young et al. (2003)

<table>
<thead>
<tr>
<th>Schema domain</th>
<th>Early maladaptive schema</th>
<th>Brief description</th>
<th>Proposed origins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disconnection and Rejection</td>
<td>Abandonment / Instability</td>
<td>The belief that significant others will leave.</td>
<td>Early experiences characterised by detachment, coldness, rejection, loneliness and abuse.</td>
</tr>
<tr>
<td></td>
<td>Mistrust / Abuse</td>
<td>The expectation that others will hurt, abuse, or take advantage.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emotional Deprivation</td>
<td>Expectation that others will not adequately meet one's need for emotional support.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Defectiveness / Shame</td>
<td>The feeling that one is defective, bad or unwanted.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Social Isolation / Alienation</td>
<td>The feeling that one is isolated from the rest of the world.</td>
<td></td>
</tr>
<tr>
<td>Impaired Autonomy and Performance</td>
<td>Dependence / Incompetence</td>
<td>Belief that one is unable to handle one's responsibilities without considerable help from others.</td>
<td>Experiences of enmeshment, undermining, overprotection.</td>
</tr>
<tr>
<td></td>
<td>Vulnerability to Harm or Illness</td>
<td>Unrealistic fear that catastrophe will strike at any time and that one will be unable to prevent it.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Enmeshment / Underdeveloped Self</td>
<td>Excessive emotional involvement and closeness with significant others.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Failure</td>
<td>The belief that one has failed or is inadequate relative to one's peers.</td>
<td></td>
</tr>
<tr>
<td>Impaired Limits</td>
<td>Entitlement / Grandiosity</td>
<td>The belief that one is superior to other people; entitled to special rights and privileges.</td>
<td>Experiencing too much permissiveness, overindulgence, lack of direction, or a sense of superiority rather limits in relation to taking responsibility and setting goals.</td>
</tr>
<tr>
<td></td>
<td>Insufficient Self-control / Self-discipline</td>
<td>Pervasive difficulty or refusal to exercise sufficient self-control and frustration tolerance to achieve one's personal goals.</td>
<td></td>
</tr>
</tbody>
</table>
Listing of EMSs has gone through revisions from original version with 16 EMSs to current with 18 EMSs (L. K. McGinn, Young, & Sanderson, 1995; Young & Gluhoski, 1996; Young, 1990; Young, 1999; Young et al., 2003). The first edition of the YSQ measuring 16 EMSs was introduced alongside the schema-focused approach (Young, 1990), with several studies supporting the validity of YSQ with a 15 EMS structure in which social undesirability EMS was dropped (for a review, see Oei & Baranoff, 2007). The YSQ is currently available in long (consisting of 232 items) and short (consisting of 90 items) forms, which include the 18 EMSs presented in Table 2. A short version of the YSQ was developed for research purposes and in the majority of studies assessing validity and reliability of YSQ the short version of the questionnaire has been used. Both versions of the YSQ include statements on one’s views about the self and the world, and respondents rate the degree to which they agree with each statement on a Likert scale from 1 to 6. For the short YSQ, endorsement or severity of EMSs is calculated as a mean score for each EMS, with higher scores indicating higher endorsement of EMS. The higher-order schema domains can be calculated as

<table>
<thead>
<tr>
<th>Schema domain</th>
<th>Early maladaptive schema</th>
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<th>Proposed origins</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Other-Directedness</strong></td>
<td>Subjugation</td>
<td>Excessive surrendering of control to others because one feels coerced.</td>
<td>Living with conditional acceptance: suppressing important aspects of self in order to gain attention and approval. For instance, the parents’ emotional needs and desires are valued more than the needs and feelings of child.</td>
</tr>
<tr>
<td>Others’ needs, desires, or responses are respected and taken into account at the expense of one’s own needs.</td>
<td>Self-sacrifice</td>
<td>Excessive focus on voluntarily meeting the needs of others at the expense of one’s own gratification.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Approval-seeking / Recognition-seeking</td>
<td>Excessive emphasis on gaining approval, recognition, or attention from other people.</td>
<td></td>
</tr>
<tr>
<td><strong>Overvigilance and Inhibition</strong></td>
<td>Negativity / Pessimism</td>
<td>A pervasive, lifelong focus on the negative aspects of life.</td>
<td>Grim and demanding environment: performance, duty, perfectionism, following rules, hiding emotions, and avoiding mistakes predominant over pleasure, joy, and relaxation.</td>
</tr>
<tr>
<td>Spontaneous feelings and impulses are suppressed and replaced by rigid, internalized rules about performance and behaviour.</td>
<td>Emotional Inhibition</td>
<td>The excessive inhibition of spontaneous action, feeling, or communication.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unrelenting Standards / Hypercriticalness</td>
<td>The underlying belief that one must strive to meet very high internalized standards of behavior and performance.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Punitiveness</td>
<td>The belief that people should be harshly punished for making mistakes.</td>
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</table>
the sum of individual subscales for EMSs within the specific domain. Scoring of the long version of the YSQ is done using a separate scoring grid.

Studies focusing on the reliability and validity of the contemporary 18 EMS subscale version of the YSQ have been conducted in several populations and languages (Bach, Simonsen, Christoffersen, & Kriston, 2017; Calvete, Orue, & González-Diez, 2013; Kriston, Schäfer, Jacob, Härter, & Hözel, 2012; Kriston, Schäfer, von Wolff, Härter, & Hözel, 2012; S. Lee, Choi, Rim, Won, & Lee, 2015; Saariaho, Saariaho, Karila, & Joukamaa, 2009; Sakulsrirasert, Phukao, Kanjanawong, & Meemon, 2016). In these studies, the validity of individual subscales for EMSs has ranged from acceptable to excellent, and studies generally support the first-order factor solution for 18 EMSs. The validity and predictive value of individual EMS subscales as measured by the YSQ have been established in relation to specific disorders (Hawke & Provencher, 2011b; Renner et al., 2012; Saariaho, Saariaho, Karila, & Joukamaa, 2011) and to other measurements of cognitive structures, such as dysfunctional attitudes (Riso et al., 2003; Riso et al., 2006; Wang et al., 2010).

Whether EMSs form a five-order latent factor structure like the five domains proposed by Young has yielded mixed results (Bach, Lockwood, & Young, 2018). In studies on higher-order structure of schema domains different methodologies (confirmatory or exploratory factor analysis), varying samples (clinical, non-clinical and mixed) and different versions of the YSQ have been used, which has resulted in models with two to five factors (Bach et al., 2018; Calvete et al., 2013; Hawke & Provencher, 2012; Kriston et al., 2012; Saariaho et al., 2009). While factor analytical studies have shown support for disconnection and rejection and impaired autonomy domains (Calvete et al., 2013), results for other higher-order factors are mixed (Bach et al., 2018; Kriston et al., 2012). Bach et al. (2018) and Kriston et al. (2012) have discussed the complexities of factor analytical methods in relation to the higher-order factor structure of EMSs and different statistical approaches. Based on the Monte Carlo simulation on model selection, Kriston et al. (2012) propose the use of confirmatory techniques, whereas Bach et al. (2018) favour an exploratory approach due to recommendations that exploratory analysis should be used for personality-like data (Hopwood & Donnellan, 2010). Overall, both Bach et al. (2018) and Kriston et al. (2012) highlight the use not only of statistical arguments but also theoretical assumptions inherent to the schema model when exploring higher-order factor structure of EMSs. Based on a recent study with a large sample of clinical and non-clinical participants ($N = 1054$), Bach et al. (2018) proposed a new four-factor model. In this model, other-directedness and overvigilance and inhibition domains were replaced with a single domain of excessive responsibility and standards, which consists of a general emphasis on meeting strict, internalized rules and expectations about performance across many aspects of life (Bach et al., 2018).
2.2.6 Empirical status of the schema model

Although systematic reviews have shown that schema therapy is a promising form of psychotherapeutic treatment (Jacob & Arntz, 2013; Sempertegui et al., 2013), treatment studies alone are not sufficient to establish a basis for the treatment approach (Pretzer & Beck, 2005). As Young’s model highlights specific developmental and cognitive components, it is also important to evaluate the theoretical foundations and empirical research into the schema model (Sempertegui et al., 2013). The following chapter summarises research focusing on empirical status of the schema model before taking a detailed look at the schema model and depressive disorders (Chapter 2.3).

EMSs have been explored in various mental disorders, with results showing that most EMSs are more severe in individuals with mental disorders than in healthy controls (L. J. Cohen, Tanis, Ardalan, Yaseen, & Galynker, 2016; Hawke & Provencher, 2011b; Hoffart Lunding & Hoffart, 2016; Jovev & Jackson, 2004; Leppänen, Kärki, Saariaho, Lindeman, & Hakko, 2015; Specht, Chapman, & Cellucci, 2009). EMSs have been studied most extensively in relation to personality disorders, particularly BPD. Two review articles present results from 17 clinical and non-clinical studies on EMSs associated with BPD or BPD features (Barazandeh, Kissane, Saeedi, & Gordon, 2016; Sempertegui et al., 2013). Based on reviews, most EMSs, particularly from disconnection and rejection and impaired autonomy and performance domains, are more pronounced in BPD patients than in patients with other mental disorders or in healthy individuals (see for instance Jovev & Jackson, 2004; Lawrence, Allen, & Chanen, 2011), which is in line with Young et al. (2003) view that patients with BPD show a particular psychological vulnerability in terms of EMSs. Carr and Francis (2010) and Reeves and Taylor (2007) reported results from non-clinical samples in which specific EMSs predicted self-reported personality disorder features even after controlling for other variables, contributing to the notion that EMSs are particularly associated with personality pathology. In a recent study, Bach and Farrell (2018) compared individuals with BPD (n = 101) to individuals with other personality disorders (n = 101) and healthy controls (n = 101) and showed that EMSs were elevated in individuals with personality disorders compared to healthy controls, and EMSs mistrust/abuse and defectiveness/shame uniquely differentiated BPD patients from patients with other personality disorders.

In addition to personality disorders, EMSs have been explored, for instance in psychosis (Taylor & Harper, 2017), depression and bipolar disorder (Halvorsen et al., 2009; Nilsson, Jørgensen, Straarup, & Licht, 2010; Nilsson, 2016; Wang et al., 2010), substance abuse (Shorey, Stuart, & Anderson, 2014) and anxiety disorders, including panic disorder, social phobia, PTSD and OCD (Hawke & Provencher, 2011b). Although specificity of certain EMSs in mental disorders or correspondence between heuristics described in Young et al. (2003) has been reported, findings concerning
individual EMS and specific disorder have not generally been consistently replicated (Hawke & Provencher, 2011b). This is in part due to considerable variability in study designs, methods (different versions of the YSQ and assessment of symptomology) and samples (i.e. inpatients, outpatients, non-clinical), which makes comparison of the results complicated. On the other hand, Young et al. (2003) do not assume specificity between certain EMSs and disorder in the schema model, but rather that EMSs develop and maintain various forms of persistent psychopathology. A significant limitation of the current state of the literature on Axis I disorders concerns the course of illness. While the severity of EMSs is established in personality disorders, only a few studies of Axis I disorders have reported illness duration or chronicity.

Whether EMSs are stable trait-like constructs is crucial for Young’s model. Based on a review on EMSs in mood and anxiety disorders, Hawke and Provencher (2011b) conclude that, although EMSs are to some extent sensitive to current symptom severity, evidence supports their existence as underlying vulnerability traits. EMSs have shown predictive value between currently and previously depressed patients above and beyond symptom severity (Halvorsen et al., 2009), and in experimental designs negative mood induction has only limited effect on EMS endorsement in healthy individuals (Stopa & Waters, 2005). Despite these findings, it has been recommended that controlling for current levels of psychological symptoms would be beneficial when exploring EMSs and other cognitive variables between mental disorders due to the potential response bias of state-related factors (Riso et al., 2003).

Empirical research has shown that EMSs are stable, and EMSs appear to act as a risk factor for psychological distress and disorders. In a 6-month follow-up study in a student sample, EMSs showed relative stability over time and were associated with symptoms of depression, anxiety, and hostility (Calvete, Orue, & Hankin, 2013). In a 9-year follow-up study on depressed patients and healthy controls, schema domains disconnection and rejection and impaired limits showed significant moderate test-retest correlations even after controlling for depressive symptoms at both time points (Wang et al., 2010). Similarly, Riso et al. (2006) found that EMSs exhibit moderate to good levels of stability in depressed outpatients over a 2.5 to 5-year period even after controlling for neuroticism and severity of depression. All EMSs have shown good relative stability over a 16-week course of evidence-based outpatient treatment for depression in a naturalistic treatment setting (Renner et al., 2012). In a one-year treatment study focusing on schema therapy for cluster C personality disorder features among patients with agoraphobia and panic disorder, it was shown that the overall schema severity predicted poorer reduction in cluster C traits (Hoffart Lunding & Hoffart, 2016).

Currently there is some evidence that EMSs stimulate maladaptive coping and that schema modes mediate the relationship between EMSs and symptomology and behaviours. EMSs have been shown to promote cognitive fusion (Fischer, Smout, & Delfabbro, 2016), and associate with lack of moment-to-moment awareness (Flink,
Sinikallio, Kuittinen, Karkkola, & Honkalampi, 2018). Recently one study also showed that similar EMSs trigger different modes depending on the individual and that they lead to specific forms of maladaptive behaviour (van Wijk-Herbrink et al., 2018).

Studies exploring the associations between EMSs and their hypothetical origins have been conducted in cross-sectional and prospective designs. In general, there is support for Young’s model in that temperament and early experiences are associated with EMSs. However, in the majority of studies only some part of the model has been explored, and there is a lack of studies focusing on the interplay between temperament, traumatic events and effects of parenting on EMSs. Regarding temperament and personality traits, EMSs have shown correlations with neuroticism in samples of mixed psychiatric outpatients and non-clinical adolescents (Muris, 2006; Thimm, 2010a) and with high harm avoidance in depressed patients (Halvorsen et al., 2009). Although based on cross-sectional studies, these findings are in line with the theoretical role of temperament in relation to EMSs. The quality of attachment has been related to EMSs from all schema domains, although more commonly with EMSs from the disconnection and rejection domain (Blissett et al., 2006; Cecero, Nelson, & Gillie, 2004; Platts et al., 2002; Platts et al., 2005; Sheffield, Waller, Emanuelli, Murray, & Meyer, 2009; Simard, Moss, & Pascuzzo, 2011). Simard et al. (2011) reported findings from a 15-year longitudinal study, in which insecure or ambivalent attachment at the age of 6, as assessed by separation-reunion procedure, was related to severity of EMSs at the age of 21. In the same study, an insecure preoccupied adult attachment style in the adulthood was similarly associated with higher EMS endorsement (Simard et al., 2011). In a cross-sectional study of undergraduate females, six specific EMSs predicted current paternal and maternal attachment (Blissett et al., 2006). In a clinical population, Platts et al. (2005) showed that attachment style and EMSs are associated with mental health difficulties, and that fearful and preoccupied attachment associate with severity of EMSs. One study also showed that EMSs associate negatively with the resolution of developmental tasks (Thimm, 2010b), which is in line with Young’s proposition that EMSs develop from an unsatisfactory completion of developmental needs.

Specific types of early traumatic events and adversities are related to EMSs (Calvete, 2014; Cecero et al., 2004; Lumley & Harkness, 2007; Wright, Crawford, & Del Castillo, 2009). Early adversities have been shown to correspond to EMSs and disorders, pointing to similarities with results from population studies in which traumatic experiences have been shown to predict the onset of many types mental disorders throughout the life course (Green et al., 2010). Childhood emotional abuse and neglect have been shown to predict EMSs of mistrust/abuse, emotional deprivation and defectiveness/shame in undergraduate students (Cecero et al., 2004). In a study of 439 currently or previously depressed women, childhood physical and emotional abuse and neglect predicted EMSs from disconnection and rejection domain and
EMSs from the disconnection and rejection domain mediated the relation between childhood trauma and depression (Rezaei, Ghazanfari, & Rezaee, 2016). In a small adolescent sample, EMSs concerning loss and worthlessness mediated the relation between retrospectively recalled childhood adversity and anhedonic symptoms and EMSs with themes of danger, the relation between childhood adversity and anxious symptoms (Lumley & Harkness, 2007). Wright et al. (2009) showed that perceptions of childhood emotional abuse or neglect were associated with psychological distress and were mediated by EMSs of defectiveness/shame, vulnerability to harm through illness and self-sacrifice. In a sample of adult women who had been victims of abuse as a child ($N = 75$), Estevéz et al. (2017) reported correlations between EMSs and different forms of childhood abuse and that EMSs of abuse, defectiveness/shame, failure and social isolation mediated the relationship between sexual abuse and later severity of depression, anxiety and hopelessness.

Whether specific parenting experiences are related to EMSs in later life has been explored in some studies (Bach et al., 2018; Sheffield, Waller, Emanuelli, Murray, & Meyer, 2005; Sheffield et al., 2009). In most of these studies, the Young Parenting Inventory (YPI; Sheffield et al., 2005) has been utilized. The YPI is a self-report questionnaire consisting of statements regarding one’s parents and experienced parenting behaviours, with subscales of specific parental experiences in the YPI corresponding to specific EMSs. Mediational analyses have shown that EMSs mediate the link between negative parenting experiences and psychological distress or symptoms (Bach et al., 2018; Sheffield et al., 2005). In these studies, retrospective recollections of parenting have generally corresponded to severity of EMSs and shown that certain forms of parenting are in a conceptually meaningful way related to schema domains (Bach et al., 2018). At the level of individual EMSs however, only limited evidence is available that specific experiences of parenting directly correspond to specific EMSs in adulthood (Sheffield et al., 2005).

Although EMSs appear to be stable and trait-like and are related to their hypothesized origins, whether they are modifiable particularly through schema therapy remains unclear. Because Young’s model emphasises altering EMSs as a key mechanism for change in therapy, the relief in EMSs should be expected as an outcome of treatment. Conversely, a systematic review (Taylor, Bee, & Haddock, 2017) showed that overall there is limited evidence that EMSs change during schema therapy, as in most of studies assessment of EMSs has not been included as a treatment outcome. Taylor et al. (2017) located 12 studies on the efficacy and effectiveness of schema therapy in reducing EMSs and improving symptoms, of which 11 showed changes in EMSs and disorder-specific symptoms. However, formal mediation analytical studies are lacking, and evidence for changes in EMSs in other than personality disorders is sparse (Taylor et al., 2017). In addition, some studies indicate that other forms of psychotherapy might be beneficial in altering EMSs at least in the short term.
For instance, Wegener et al. (2013) explored the effects of an 8-week integrative psychodynamic therapy on EMSs among 47 inpatients with MDD and found that integrative therapy without schema-specific elements reduced symptom distress, but also had a distinct impact on EMSs. Due to small sample size of the study, short treatment duration and lack of comparison group, it is unclear whether other psychotherapeutic approaches are similarly effective in reduction of EMSs as schema therapy (Wegener et al., 2013). To gain a better understanding on effects of EMSs on treatment outcomes and mechanisms of change in schema therapy, future studies should incorporate control groups, uniform assessment of EMSs and symptoms and larger sample sizes (Taylor et al., 2017).

2.3 SCHEMA MODEL AND DEPRESSIVE DISORDERS

2.3.1 Early maladaptive schemas and symptoms of depression

Relationships and specificity of EMSs in relation to symptoms of depression and depressive disorders have been explored in various studies. For their review article, Hawke and Provencher (2011b) located seven studies from 1995 to 2010 in which relationships between symptoms of depression and EMSs were explored in nonclinical or mixed clinical populations. EMSs from disconnection and rejection and impaired autonomy and performance have been most consistently associated with the severity of depression and generally most EMSs have correlated with symptom severity (Hawke & Provencher, 2011b). For instance, in a small sample (N = 55) with mostly depressed patients, all schema domains showed correlations to symptoms of depression (L. McGinn, Cukor, & Sanderson, 2005). Defectiveness/shame EMS has been associated with depressive symptoms in several studies (Calvete, Estévez, López de Arroyabe, & Ruiz, 2005; Harris & Curtin, 2002; Schmidt, Joiner, Young, & Telch, 1995; Stopa & Waters, 2005). In a study with 203 mixed clinical outpatients (Welburn, Coristine, Dagg, Pontefract, & Jordan, 2002), 47% of the variance in depressive symptoms was explained by EMSs and that abandonment and insufficient self-cont-rol EMSs uniquely predicted symptoms of depression. Using multiple regression in a mixed clinical sample Glaser et al. (2002) found that EMSs of social isolation and abandonment predicted depressive symptoms. The associations between abandonment and depressive symptoms has also been reported by Stopa et al. (2001). In addition, association between the severity of EMS self-sacrifice and depressive symptoms has been replicated (Calvete et al., 2005; Stopa & Waters, 2005).
2.3.2 Early maladaptive schemas and depressive disorders

Current evidence indicates that EMSs are not only related to symptoms of depression but seem to represent underlying vulnerability markers of MDD and that EMSs are robust to change in depressed patients. EMSs seem to remain relatively stable during both short-term evidence-based treatment for MDD and over periods of several years in depressed patients (Renner et al., 2012; Riso et al., 2006; Wang et al., 2010). Halvorsen et al. (2010) reported findings from a 9-year follow-up study in depressed patients using the 16 EMS version of the YSQ. Results showed that the schema domain Undesirability (later included in the disconnection and rejection and impaired autonomy and performance domains) at baseline predicted severity of depressive symptoms at follow-up and impaired limits domain predicted MDD episodes in the time interval. Similarly, Renner et al. (2012) found that EMSs from impaired autonomy and performance at pre-treatment predicted depression symptoms after a 16-week treatment of depression. In cross-sectional analyses, Renner et al. (2012) showed that the EMSs abandonment/instability, emotional deprivation, and failure were positively related to depressive symptom severity when controlling for overlap among EMSs. However, neither of the studies assessed comorbid personality pathology in relation to EMSs and depression.

Patients with MDD endorse several EMSs at greater intensity than healthy controls (Bailleux, Romo, Kindynis, Radtchenko, & Debray, 2008; Halvorsen et al., 2009; Shah & Waller, 2000). Shah and Waller (2000) reported that MDD patients (n = 60) had higher scores on all EMS subscales compared with non-clinical controls (n = 67). Bailleux et al. (2008) found that depressed inpatients (N = 15) had higher scores for 12 out of 15 EMSs compared to French normative values. In one study, currently depressed patients (n = 23) were compared with those previously depressed (n = 40) and never depressed controls (n = 40), and it was shown that after controlling for depressive symptoms currently depressed and previously depressed patients had higher endorsement of EMSs emotional deprivation, abandonment, mistrust, defeciveness/shame and social undesirability compared to those never depressed (Halvorsen et al., 2009). In the same study, currently depressed patients showed higher endorsement on all EMSs compared with those never depressed and on seven EMSs compared with those previously depressed (including EMSs dependence, vulnerability to harm or illness, enmeshment, failure, entitlement, insufficient self-control and social isolation). Similarly, Hoffart et al. (2005) showed that asymptomatic previously depressed patients scored higher on impaired autonomy and disconnection domains than individuals that had never been depressed.

EMSs in chronically depressed patients have been explored only in one study, and no results for individual EMSs have been reported. Riso et al. (2003) reported that patients with dysthymia or double-depression showed elevated EMS endorsement in domains of overvigilance, impaired autonomy and disconnection and rejection.
compared to non-chronically depressed patients or controls who had never been psychiatrically ill. These results remained even after controlling for the concurrent severity of depressive symptoms and personality disorder symptoms. In the same study, both chronically and non-chronically depressed patients were elevated on all used cognitive variables (schema domains, dysfunctional attitudes, attributional style and response style) from never ill controls, but only schema domains differentiated depressed groups when other variables were controlled for. Riso et al. (2003) conclude that schema domains overvigilance and impaired autonomy might act as general vulnerability factors for chronic depression and that these domains also have conceptual overlap with cluster C personality disorders, which have been related to poor outcome in chronic depression (Hayden & Klein, 2001).

Studies comparing EMSs between MDD and other mental disorders have been conducted in personality, mood and anxiety disorders. In relation to personality disorders, Hulbert et al. (2011) reported that BPD patients \((n = 30)\) endorsed only EMSs of mistrust/abuse and entitlement with greater intensity than MDD patients \((n = 30)\), whereas another study (L. J. Cohen et al., 2016) showed that, in a sample of psychiatric inpatients \((N = 100)\), BPD is differentiated from mood disorders (MDD, bipolar disorder or schizoaffective disorder) by the severity of 4 out of the 5 schema domains. However, Hulbert et al. (2011) included participants with sub-syndromal BPD, whereas Cohen et al. (2016) did not consider affective symptoms. On the other hand, comorbid MDD has not been shown to affect EMS endorsement in patients with BPD (Lawrence et al., 2011; Unoka, Fogd, Seres, Kéri, & Csukly, 2015), which supports the severity of EMSs in personality disorders compared to MDD. With regards to bipolar disorder, studies have yielded mixed results. In one study, patients with MDD were compared to patients with bipolar disorder in remitted phases of the disorders and results showed that bipolar disorder is associated more strongly with EMSs than MDD (Nilsson, Nielsen Straarup, & Halvorsen, 2015). In another study, Hawke and Provencher (2011a) concluded that bipolar disorder does not differ substantially from MDD or anxiety disorders when concurrent symptoms are taken into account. Compared to patients with somatization disorder, MDD patients have shown to endorse majority of EMSs more strongly, including emotional deprivation, mistrust and abuse, social isolation, defectiveness/shame, failure and subjugation (Davoodi et al., 2018).

To summarise, in MDD elevations across schema domains have been reported and EMSs appear to reflect the underlying characteristics of individuals, rather than merely being reflections of concurrent symptoms. The EMSs most consistently associated with MDD are similar to those associated with depressive symptoms in non-clinical populations and represent disconnection and rejection and impaired autonomy and performance domains. EMSs from these domains have also been related to the persistence of depression. As per Young (2003), this places at the core of depressive disorders themes of lack of security, safety, and stability and expectations that
one’s ability and capacity to separate, survive, cope independently is impaired. Contrasting these findings with those from comparative studies, it appears that EMSs associated with MDD are less severe than those with BPD, but more severe than in healthy individuals. In addition, chronic depression has more pronounced associations with the severity of schema domains regardless of personality features or concurrent symptoms. Overall, chronicity and endurance of psychopathology is associated with the severity of EMSs, which is consistent with the basics of the schema model and highlights the potential relevance of EMSs as vulnerability factors for the chronic course of depression. Although EMSs in chronic depression have only been marginally explored, it could be hypothesized that similar EMSs could characterise chronic depression and BPD, as there are similar underlying genetic, early environmental, and temperamental factors between the disorders (Klein & Schwartz, 2002). However, in addition to not defining the course of depression, in the majority of previous studies on MDD and EMSs the role of comorbid personality pathology has not been assessed. Considering the strong association between personality disorders and EMSs, as well as frequent comorbidity between MDD and personality disorders, it is possible that previous findings have been influenced by comorbid personality pathology.

### 2.3.3 Early maladaptive schemas and suicidality in depressed patients

An emerging area in the schema model research has been the relationship between suicidality and EMSs (Ahmadpanah et al., 2017; Castille et al., 2007; Dutra, Callahan, Forman, Mendelsohn, & Herman, 2008; Khosravani, Sharifi Bastan, Samimi Arddestani, & Jamaati Ardakani, 2017; Leppänen, Vuorenmaa, Lindeman, Tuulari, & Hakko, 2016; Lewis et al., 2015; Nilsson, 2016). Different forms of suicidality have been explored, including suicidal risk in OCD (Khosravani et al. 2017) and chronically traumatized patients (Dutra et al., 2008), parasuicidality in BPD (Leppänen et al., 2016) and mixed clinical samples (Lewis et al. 2015; Castille et al., 2007) and suicide attempts in bipolar disorder (Nilsson, 2016).

In relation to MDD, one recent study has focused on suicide attempts and EMSs. Ahmadpanah et al. (2017) reported that MDD patients with a recent history of suicide attempts scored significantly higher on all EMSs from domains of disconnection and rejection and impaired autonomy and performance than MDD patients without suicide attempts, but the groups did not differ in terms of clinician-rated depressive symptoms. In the same study, patients with MDD showed global elevation on EMSs compared to healthy controls. For patients with bipolar disorder, Nilsson (2016) reported that, during remission, EMSs social isolation, incompetence and entitlement differentiated those who had a history of lifetime suicide attempt from non-attempters. In a sample of OCD patients, a lifetime suicide attempt was related to higher
endorsement of EMSs compared to those without history of suicide attempt (Khosravani et al., 2017). Overall, several EMSs have been associated with suicide attempts in mood disorders as well as suicidal ideation in mental disorders. However, whether similar EMSs are related to both suicide attempts and suicidal ideation is unknown. In addition, no prior research has explored the role of concurrent hopelessness in relation to EMSs and suicidality, despite hopelessness being among the most well-established psychological factors in relation to suicidality (Beck et al., 1985; Beck et al., 1990).

2.3.4 Schema therapy and treatment of depression

Although Young (1990) presented schema-focused therapy as a potential form of treatment of chronic depression at an early stage of his model and has later provided a rationale for the use of the schema model in depression (Young & Mattila, 2006), schema therapy has mainly been implemented in personality disorders. More recently, Renner et al. (2013) have presented the cognitive schema model for chronic depression and provided a treatment protocol using schema therapy, which they argue targets empirically established risk factors of chronic depression. Overall, Renner et al. (2013) argue that current outpatient treatments for depression leave the underlying vulnerability to depression, in terms of EMSs, untouched and that depressed patients with high levels of EMSs might benefit from schema therapy. In the model, EMSs are conceptualised as proximal risk factors which mediate the effects of personality pathology and adverse events in childhood to the development of chronic depression, and factors that maintain persistent depression, such as dysfunctional coping and interpersonal problems, further serve to reinforce and maintain EMSs. Renner et al. (2013) underscore personality comorbidities frequently associated with chronic depression and note cluster C personality pathology among the distal risk factors contributing to EMSs.

Clinical trials of schema therapy for depression are currently sparse, and there is only preliminary support for the acceptability and feasibility of schema therapy in the treatment of MDD and chronic depression (Carter et al., 2013; Malogiannis et al., 2014; Renner et al., 2016). In one RCT ($N = 100$) schema therapy was compared to CBT in the treatment of MDD (Carter et al., 2013). In the study by Carter et al. (2013) weekly schema therapy or CBT for six months was followed by six months of monthly therapy sessions. Both treatments yielded a similar 50% reduction in symptoms of depression and half of the participants recovered in both schema therapy and CBT. However, those randomised to schema therapy showed higher levels of comorbid personality disorder symptoms and more comorbid personality disorder diagnoses at baseline than those randomised to CBT. In an additional analysis, Carter et
al. (2013) failed to find any differences in the reduction of depressive symptoms between schema therapy and CBT depending on comorbid personality disorder, but whether personality disorder features differed between the groups after treatment was not assessed. After re-analysing the data (Carter et al., 2018), it was reported that 67% of participants in the RCT met the criteria for chronic depression (equal for schema therapy and CBT), and chronicity and severity of depression-related cognitions, but not baseline symptom severity, predicted poorer therapy symptom reduction for both schema therapy and CBT.

Two small-scale single-case series studies have focused on schema therapy for chronic depression. In a small \((N = 12)\) preliminary study without a control group, Malogiannis et al. (2014) reported 60% remission rates (evaluated as score < 8 in the Hamilton Depression Rating Scale) at the 6-month follow-up and large and significant changes in scores on the YSQ. Renner et al. (2016) reported significant and large reduction in depressive symptoms relative to a no-treatment control phase in a sample of 25 chronic MDD patients. Using the same sample, Renner et al. (2018) later explored whether alleviation in self-assessed core beliefs, as assessed using five visual analogue scales, precedes or occurs simultaneously with the reduction of symptoms to test whether modification of EMSs acts as a mechanism in symptom change. These analyses showed no support for model where changes in core beliefs precede the alleviation of symptoms and showed that changes in core beliefs and symptoms occur concurrently. However, as the assessment was conducted using idiosyncratic core beliefs and the sample size was small, the mechanisms of change between EMSs and symptoms remain unclear.

2.4 SUMMARY OF THE LITERATURE REVIEW

Depressive disorders are aetiologically complex and multifactorial disorders with major societal and individual burden. There are effective treatment options for MDD, but the chronic course of depression and increased risk of suicidality associated with depression remain significant clinical challenges in the management of depression. Although it is not clear whether chronic depression forms its own clinical entity, the inclusion of PDD diagnosis in the DSM-5 highlights the accumulated evidence on clinical differences in life histories, psychiatric comorbidity and personality characteristics between episodic and the chronic course of depression. Symptom-focused treatments appear to be less effective in chronic depression and may not adequately address risk factors associated with suicidality in depression. Therefore, the role of persistent cognitive factors has been considered as a potentially relevant point of research and treatment.

One of the cognitively-oriented models for persistent psychopathology developed over the past few decades is the schema model by Young. The schema model
presents a theoretically integrative framework on the development of chronic psychological problems, and schema therapy, a form of psychotherapy based on the schema model, has been effectively implemented in the treatment of personality disorders. The central concept of the schema model is the EMS. EMSs are relatively stable, trait-like self-referent cognitive structures, which associate with psychological symptoms and various disorders, including depression. The basis, nature and role of EMSs have been explored in several studies. While most of these studies have been cross-sectional, EMSs seem to associate with temperamental and developmental factors highlighted in the model. However, the evidence on specificity between certain EMSs and their hypothesized origins have not been replicated consistently, and the theoretical latent factor structure of EMSs remains controversial. Evidence on EMSs from domains of disconnection and rejection and impaired autonomy and performance appear to be most consistent with Young’s model. These domains have shown a statistically sound factor structure, to correlate with several theoretically relevant factors regarding their hypothetical origins and to act as potential vulnerability factors for psychological problems above and beyond symptom severity. Based on comparative and longitudinal studies, EMSs from these domains are pronounced in patients with personality disorders, namely BPD, and may also act as vulnerability factors for depression.

Despite the growing interest in the cognitive characteristics of persistent depression and in utilizing schema therapy for chronic depression, there is limited research exploring the basic concepts of the schema model in chronic depression or any other chronic Axis I disorder. Overall, there is some initial support for the schema model in chronic depression, as chronic depression has been shown to be differentiated from non-chronic depression in terms of EMS domains and EMSs appear to have a negative effect on the course and recurrence of depression over time. However, the course or duration of the depression or the presence of comorbid personality pathology has not been reported in the majority of the previous studies. As Young’s model presumes that EMSs are particularly relevant in chronic psychological problems, lack of information on duration and comorbidities is a notable limitation of previous findings in relation to basic propositions of the schema model. In addition, lack of personality pathology assessment may have biased previous findings as comorbid personality disorders, particularly BPD and cluster C personality disorders, frequently co-occur with depression and are related to poorer treatment outcomes and more severe dysfunctional cognitive structures. To date, individual EMSs have not been explored in relation to chronic depression and there are no studies in which chronic Axis I disorder are compared with personality disorders in terms of EMSs. Exploring the role of EMSs in chronic depression and personality disorders could offer greater insight into how EMSs are related to both disorders, as well as whether the schema model is applicable to a broader spectrum of persistent disorders.
Similarly, although EMSs are associated with suicidality across mental disorders, the role of EMSs in suicidality of depressed patients has only been marginally explored. For instance, it is unknown whether similar EMSs are associated with both suicide attempts and suicidal ideation, and the role of hopelessness in relation to EMSs and suicidality has not been explored. As cognitive distortions have been proposed as an important target in the treatment of suicidality, further exploring EMSs and suicidal ideation may offer clinically relevant insights into suicidality and potentially help to improve suicide prevention.
3 AIMS OF THE STUDY

The general aim of this thesis is to test the assumptions of the schema model among depressed outpatients. The aim is two-fold. First, to focus on the basic assumptions of the schema model by further elucidating the role of EMSs in chronic depression and personality disorders. Secondly, to establish whether EMSs are related to suicidal ideation in depressed patients. More specifically, the aims of sub-studies are as follows:

1. To explore the presence and severity of EMSs in chronically depressed patients with or without cluster C personality pathology and patients remitted from chronic depression (Study I).

2. To explore differences and commonalities in EMSs and concurrent health status between patients with chronic depression and borderline personality disorder (Study II).

3. To test whether EMSs among psychiatric outpatients in treatment for MDD differ by presence of suicidal ideation and whether specific EMSs associate with suicidal ideation when the effects of concurrent symptoms, personality pathology and course of depression are taken into account (Study III).
4 MATERIALS AND METHODS

4.1 STUDY DESIGN AND POPULATION

The present study is based on two separate psychiatric outpatient samples: one with MDD and one with BPD. The data on MDD patients is based on a naturalistic follow-up study of MDD patients carried out at the Kuopio University Hospital, and subsamples of this data are used in Studies I–III. The follow-up assessment is used as primary data point for MDD patients in order to determine the chronicity of depression, possible comorbid personality disorder diagnosis and as an assessment point for EMSs. For study II, a sample of BPD patients from the Oulu BPD Study is used as a comparison group for chronically depressed patients from the MDD data. The following presents general description of data sources and samples used in Studies I–III.

4.1.1 Patients with MDD and chronic depression

One hundred patients with MDD (56.6% women; \( M_{\text{age}} = 39.4 \text{ years}, SD = 11.9 \)) were recruited from the Department of Psychiatry at Kuopio University Hospital in 2011–2012. The recruitment setting was a university hospital tertiary care clinic, where participants received standard psychiatric outpatient care. The care received comprised treatment visits to both a physician (including evaluations for pharmaceutical therapy) and another health professional (psychiatric nurse, psychologist) who provided either supportive therapy or psychotherapy, based on a consensus between the treating physician and the health professional assigned to treat the patient. The psychotherapy approaches utilized included psychodynamic psychotherapy and CT, but no schema-focused approaches were used.

At baseline, the diagnosis of MDD was confirmed by using the Structured Clinical Interview for DSM-IV (SCID-I; First, Spitzer, Gibbon, & Williams, 1996) conducted by specifically trained mental health professional. Patients suffering from epilepsy, bipolar disorder, psychotic disorder and depression related to medical conditions or substance abuse were excluded from the study. Of the initial 100 patients, 79 participated in the follow-up. The mean duration between baseline and follow-up assessments was 8.40 months (\( SD = 2.30 \)). At follow-up, SCID-I was repeated, together with the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II; First, Gibbon, Spitzer, Williams, & Benjamin, 1997). Diagnostic information on personality disorders was obtained at follow-up due to findings that concurrent categorical diagnoses for personality disorders may be affected by an acute depressive
episode (Melartin, Haukka, Rytsälä, Jylhä, & Isometsä, 2010; Stuart, Simons, Thase, & Pilkonis, 1992). There were no differences in gender ($p = .630$), marital status ($p = .594$) or severity of depression ($p = .585$) between participants in the follow-up assessment and non-participants at baseline. However, participants ($M_{\text{age}} = 40.5$ years, $SD = 11.7$) were older than non-participants ($M_{\text{age}} = 34.3$ years, $SD = 12.2$, $p = .034$). One participant was excluded from studies I–II due to a lack of necessary diagnostic information needed to establish the chronicity of depression.

A background questionnaire was used at both assessment points to collect information on demographics (age, sex, education, marital status, illness history) and the use of antidepressant medications. Participants also completed a series of self-report inventories at both assessment points. The use of antidepressant medications was double-checked from the prescription documents that the patients provided at the study visit. Information on the duration of treatment contact and number of treatment visits was obtained from patient records.

### 4.1.2 Comparison group with borderline personality disorder

A sub-sample from the Oulu BPD Study was used as a comparison group for chronically depressed patients in Study II. The Oulu BPD Study is a research project for developing a community mental health care treatment model for BPD carried out in 2010–2011 by Leppänen and co-workers (Leppänen, 2015; Leppänen, Hakko, Sintonen, & Lindeman, 2016; Leppänen et al., 2015; Leppänen et al., 2016).

Patients from the six local units for mental health care services in the City of Oulu were recruited for the Oulu BPD Study. Inclusion criteria were that patients fulfilled the SCID-II criteria for BPD and were over 20 years of age. Trained mental health professionals conducted SCID-II interviews. Participants completed a background questionnaire on demographics and self-report inventories. In addition to the BPD diagnosis, in order to be included in the Oulu BPD study, participants were required to have severe symptoms and/or have made previous unsuccessful attempts at treatment. Patients with schizophrenia spectrum diseases/psychoses, bipolar disorder (type I), neuropsychiatric disorder and severe substance abuse problem (which clearly impaired commitment to treatment) were excluded from the Oulu BPD study. Symptoms considered to be severe included parasuicidality (i.e. cutting, impulse overdose of medication) and/or considerable emotional instability affecting their social or professional life. In the case of previously unsuccessful treatment, the treatment may have ended because the patient withdrew from treatment, or because the patient was still suffering from severe symptoms despite undergoing treatment.
4.1.3 Design and participants – Study I

Study I was an observational study where baseline and follow-up data on MDD patients were used to establish diagnosis of chronic depression and personality pathology. Clinical variables, EMSs and overall functioning between the study groups were compared in cross-sectional analysis. Current chronic depression was defined as a current MDD episode lasting at least two years and/or dysthymia according to SCID-I. Chronic depression in remission was defined as a previous MDD episode lasting at least two years and/or dysthymia at the time of the baseline assessment and remission during the follow-up phase. From the MDD data, 15 patients met the criteria for current chronic depression with comorbid cluster C personality disorder, 23 were currently chronically depressed and 13 met the criteria for chronic depression at the time of baseline assessment and remission during follow-up assessment. Patients with current non-chronic depression (n = 8), non-chronic depression in remission (n = 17), and chronic depression with other than cluster C personality disorder (n = 2) at the time of the follow-up assessment were excluded from Study I.

4.1.4 Design and participants – Study II

In Study II, group differences on EMSs and concurrent health status between chronic depression and BPD were compared in cross-sectional design. Participants with current or remitted chronic depression without personality disorder (as defined in Study I) were used as a comparison group for BPD patients from the Oulu BPD study. The baseline of the Oulu BPD Study was used as an assessment point for Study II (N = 65, 86.2% women). BPD patients with psychotic disorder or bipolar disorder (type I and II) were excluded. In addition, participants with missing information on measurements for either EMSs or health status were excluded. Thirty-six participants with chronic depression (58.3% women) and 41 participants with BPD (83.3% women) met the inclusion criteria for Study II. Due to significant gender differences between study cohorts, a sex-matched sub-sample (n = 30) was randomly formed from each data set for the purposes of Study II. This was based on previous findings in clinical samples on gender differences in overall EMS endorsement and effects of concurrent psychological symptoms on EMS endorsement depending on gender (Shorey, Anderson, & Stuart, 2012; Shorey, Stuart, & Anderson, 2013; Shorey et al., 2014).

4.1.5 Design and participants – Study III

Study III concerned suicidal ideation in psychiatric outpatients in treatment for MDD. Patients with and without suicidal ideation were compared in cross-sectional design. As in Study I, baseline and follow-up data on MDD patients were used for
information on symptoms and diagnosis. For the purposes of Study III, all 79 participants from the follow-up assessment point of the data on MDD patients were included in the study. Out of the 79 patients, 57.7% met the diagnostic criteria for MDD, and 42.3% were in full or partial remission.

4.2 MEASURES

4.2.1 Early maladaptive schemas (YSQ-S2-extended)

The Finnish version of the extended short version of the Young Schema Questionnaire (YSQ-S2-extended; Saariaho et al., 2009) was used to assess early maladaptive schemas and schema domains in Studies I–III. The YSQ-S2-extended measures 18 early maladaptive schemas grouped under five schema domains: disconnection and rejection (includes five schemas), impaired autonomy (four schemas), impaired limits (two schemas), other-directedness (three schemas) and overvigilance and inhibition (four schemas). The questionnaire contains 90 self-statements (five for each schema), which respondents are asked to rate on a Likert scale ranging from 1 (completely untrue of me) to 6 (describes me perfectly). Scores for each early maladaptive schema subscale are based on the mean of the five schema statements. Total scores for schema domains are calculated as the total sum of the schema scores for each domain. The factor structure and psychometric properties of the Finnish version of the YSQ-S2-extended have been established (Saariaho et al., 2009). Because EMSs of the BPD group were assessed using the long form of the YSQ (YSQ-L3a; Young & Brown, 2003), schema scores for the BPD group were recalculated using the 90 corresponding items between YSQ-L3a and YSQ-S2-extended. The internal reliability (coefficient alpha) of the YSQ-S2-extended in Studies I–III was good (median alphas between .81 and .88) and comparable to that reported in studies using the YSQ-S2-extended (Saariaho et al., 2009; Flink et al., 2018).

4.2.2 Depression and suicidal ideation (BDI-21)

In Studies I and III, the severity of depression was assessed using the 21-item Beck Depression Inventory (BDI-21; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; Beck, Steer, & Carbin, 1988), and scores were analysed as a continuous variable. The BDI-21 is a self-report instrument consisting of 21 questions rated on a scale of 0–3. Higher total scores indicate more severe depressive symptoms. Total scores of 0–9 indicate minimal depression, 10–18 mild depression, 19–29 moderate depression, and 30–63 severe depression. The Finnish version of the BDI-21 has been shown to be valid and reliable (Viinamäki et al., 2004).
For the purposes of Study III, one of the BDI-21 items (i.e. number 9) concerning suicidal thoughts and wishes, was used to assess suicidal ideation. Absence of suicidal ideation was based on the response alternative, ‘I don’t have any thoughts of killing myself’, and current suicidal ideation was based on the following three responses: 1) ‘I have thoughts of killing myself, but I would not carry them out’; 2) ‘I would like to kill myself’; and 3) ‘I would kill myself if I had the chance’. Thus, participants were considered to have suicidal ideation if they had any thoughts of killing themselves (i.e. any of the last 3 options) and therefore suicidal ideation defined in agreement with Diekstra and Garnefski (1995) as cognitions varying from transient thoughts about the worthlessness of life and death wishes to concrete plans for killing oneself and obsessive preoccupation with self-destruction. The same methodology for assessment of suicidal ideation has been used in various studies (Casey et al., 2008; Hintikka et al., 1998; Kaltiala-Heino, Rimpelä, Marttunen, Rimpelä, & Rantanen, 1999; Klomek et al., 2008). In calculating BDI scores for Study III, the suicidality item was excluded (BDI range 0–60). For Study I, the internal reliability (coefficient alpha) of the BDI was .88 at baseline and .91 on follow-up. For Study III, internal reliability of the BDI with all 21 items was .91 at baseline and .93 at follow-up, and with item 9 omitted .91 at baseline and .92 at follow-up.

### 4.2.3 Social, occupational and psychological functioning (GAF)

The Global Assessment of Functioning (GAF; APA, 1994) was used to assess the overall functioning of patients in Study I. The GAF is a numerical scale used to rate the social, occupational, and psychological functioning of an individual. Scores range from 100 (extremely high functioning) to 1 (severely impaired). The assessment was made at the time of the diagnostic interviews by trained mental health professionals conducting the diagnostic interviews. The GAF has shown satisfactory reliability and can be used to measure changes at group level (Söderberg, Tungström, & Armelius, 2005).

### 4.2.4 Health status (15D)

In Study II, health status was assessed using the 15D (Sintonen, 2001). The 15D is a generic self-administered instrument for measuring health status and health-related quality of life among adults. It consists of 15 dimensions: mobility, vision, hearing, breathing, sleeping, eating, speech, excretion, usual activities, mental functioning, discomfort and symptoms, depression, distress, vitality, and sexual activity. Each dimension has five grades of severity. A set of population-based preference weights is used to calculate the scores (single index number) on a 0–1 scale, where a single total
index score (15D score) represents the overall health status, and dimension level values reflect the beneficence of the dimension values, from having no problems on the dimension (1) to being dead (0). Validity and reliability of the 15D has been well established in several chronic conditions, including mental disorders (Saarni et al., 2006; Sintonen, 1994; Sintonen, 2001).

4.2.5 Hopelessness (HS)

In Study III, hopelessness was assessed using the Beck Hopelessness Scale (HS; Beck, Weissman, Lester, & Trexler, 1974). HS is a 20-item self-report consisting of 20 true-false statements assessing the degree to which respondent holds negative expectations about the future. HS is designed to measure three major aspects of hopelessness: feelings about the future, loss of motivation, and expectations. The total score of HS ranges from 0 to 20, with a higher score indicating a higher level of hopelessness. The Finnish version of the HS has shown good reliability in previous studies (Haatainen et al., 2004; Haatainen et al., 2003). For Study III, the internal reliability (coefficient alpha) of the HS was .91 at baseline and .92 on follow-up.

4.3 STATISTICAL METHODS

4.3.1 Study I

Differences between the three groups with chronic depression were examined using the χ² test and Freeman–Halton extension of Fisher’s exact test for categorical variables and one-way analysis of variance (ANOVA) for continuous variables. Post hoc Bonferroni corrections were used for pairwise comparisons when an overall difference was showed in ANOVAs. Because the mean age and age at the time of the first depressive episode had a heterogeneous variance, the Welch statistic was used in order to determine significance. Effect sizes for continuous variables were calculated as ω². The effect size was considered small if ω² = 0.01, medium if ω² = 0.06, and large if ω² = 0.14 (Field, 2013). For categorical tests, effect sizes were calculated as Cramer’s V and interpreted for df = 2 as small if V = .07, medium if V = .21, and large if V = .35. All statistical analyses were conducted using SPSS 24.0 for Windows.
4.3.2 Study II

Differences between patients with chronic depression and BPD were examined using the $\chi^2$ test for categorical variables and the $t$ test for continuous variables. The magnitude of difference in the EMS subscale scores was calculated using Cohen’s $d$ as a measure of effect sizes (small, $d = 0.2$; medium, $d = 0.5$; large, $d = 0.8$; Cohen, 1988). Patients with BPD were used as a reference group with positive or negative effect sizes indicating, respectively, higher or lower EMS scores in this group. To address the effect of concurrent psychological symptoms on EMS endorsement, significant differences on any of the mental dimensions (mental functioning, discomfort and symptoms, depression, or distress) of 15D were entered as covariates in univariate analysis (Bonferroni adjusted) with significant EMSs. The magnitude of difference in the univariate analysis was calculated as $\eta^2$, which was transformed to Cohen’s $d$ according to a formula by Cohen (1988). All statistical analyses were conducted using SPSS 24.0 for Windows.

4.3.3 Study III

Differences between patients with and without suicidal ideation were examined using the $\chi^2$ test for categorical variables and the $t$ test for continuous variables. The magnitude of difference in the EMS subscale scores was calculated using Cohen’s $d$ as a measure of effect sizes. Patients with suicidal ideation were used as a reference group with positive or negative effect sizes indicating, respectively, higher or lower EMS scores in this group. Each EMS shown to be significantly associated with suicidal ideation in univariate analysis was further analysed in multivariate logistic models. In additional analyses, any of the demographic and clinical variables that differed significantly between the two groups were used as covariates due to their connection with suicidal ideation. Statistical analyses were conducted using SPSS 22.0 and SPSS 24.0 for Windows.

4.4. ETHICAL APPROVAL

The Research Ethics Committee of the Northern Savo Hospital District accepted the study protocol for the study on patients with MDD. The Ethics Committee of Oulu University Hospital accepted the study protocol for the Oulu BPD Study. All participants provided written informed consent before entering the study, and participants were informed that declining or discontinuing participation would have no influence on their treatment.
5 RESULTS

5.1 EARLY MALADAPTIVE SCHEMAS AND CHRONIC DEPRESSION (STUDY I)

In Study I, the aim was to establish whether comorbid cluster C personality disorder relates with higher endorsement of EMSs in chronically depressed patients and explore how current chronic depression and chronic depression in remission relate with EMSs.

Sixty percent of the chronically depressed patients with comorbid personality disorder met the diagnostic criteria for obsessive-compulsive personality disorder, and 40% for avoidant personality disorder. The three groups were largely similar in terms of background variables and illness history apart from length of treatment contact (Table 3). Post hoc analysis showed that patients with comorbid personality disorder had longer treatment contact than those remitted from chronic depression.

At the time of the baseline assessment, the groups did not differ in depressive symptoms according to BDI-21 or overall functioning according to GAF (Table 3). At the time of the follow-up assessment, there were statistically significant and, in terms of effect sizes, large differences between the groups. Post hoc analyses showed that remitted patients were less depressed and had higher GAF scores than those in other groups. The two currently depressed groups did not differ in terms of BDI-21 or GAF scores at the time of the follow-up.

There were statistically significant and, in terms of effect sizes, medium to large differences between the groups in four of the five schema domains and 12 of the 18 EMS subscales (Table 4). Overall, patients with comorbid personality disorder were more maladaptive with respect to schema domains and individual EMS subscales than the other two groups. Although remitted patients were significantly less depressed than those with current chronic depression without personality disorder, there were no significant differences in EMS subscales or schema domains between the groups.
Table 3. Demographic and clinical variables in current chronic depression with comorbid cluster C personality disorder (CD_{CPD}), chronic depression (CD) and chronic depression in remission (CD_{R})

<table>
<thead>
<tr>
<th>Demographics</th>
<th>CD_{CPD} (n = 15)</th>
<th>CD (n = 23)</th>
<th>CD_{R} (n = 13)</th>
<th>Test statistics</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex (% women)</td>
<td>60.0%</td>
<td>65.2%</td>
<td>38.5%</td>
<td>χ²(2) = 2.51, p = .285</td>
<td>V = .222</td>
</tr>
<tr>
<td>Mean age (SD) in years</td>
<td>46.1 (10.1)</td>
<td>41.0 (8.2)</td>
<td>37.2 (15.3)</td>
<td>F(2, 48) = 2.44, p = .106</td>
<td>ω² = 0.053</td>
</tr>
</tbody>
</table>

Clinical characteristics

| Mean number of lifetime depressive episodes (SD) | 2.7 (2.1) | 2.8 (2.3) | 2.3 (1.7) | p = .769 | ω² = -0.029 |
| Mean length of treatment contact in months (SD) | 53.5 (23.5) | 40.1 (19.0) | 30.3 (17.0) | p = .014 | ω² = 0.127 |
| Mean number of monthly treatment visits (SD) | 2.2 (1.2) | 2.0 (1.0) | 1.9 (0.9) | p = .693 | ω² = -0.025 |
| Antidepressant medication baseline (% of total) | 73.3% | 87.0% | 100% | Exact test, p = .257 | V = .224 |
| Antidepressant medication follow-up (% of total) | 73.3% | 82.6% | 84.6% | Exact test, p = .737 | V = .117 |
| Mean age at first depressive episode (SD) | 20.4 (8.1) | 29.4 (15.9) | 29.0 (14.3) | p = .056 | ω² = 0.080 |
| Mean BDI-21 (SD) baseline | 33.3 (9.8) | 28.8 (9.6) | 28.1 (11.8) | p = .325 | ω² = 0.006 |
| Mean GAF (SD) baseline | 45.7 (6.1) | 47.9 (4.4) | 48.9 (6.1) | p = .261 | ω² = 0.015 |
| Mean BDI-21 (SD) follow-up | 33.3 (9.7) | 26.3 (11.0) | 17.3 (7.8) | p < .001 | ω² = 0.244 |
| Mean GAF (SD) follow-up | 49.5 (7.3) | 54.4 (7.3) | 74.6 (11.7) | p < .001 | ω² = 0.563 |

Note. BDI-21 = 21-item Beck Depression Inventory, GAF = Global Assessment of Functioning
Table 4. Means and standard deviations for early maladaptive schema subscales and schema domains in current chronic depression with comorbid cluster C personality disorder (CDCPD), chronic depression (CD) and chronic depression in remission (CDR)

<table>
<thead>
<tr>
<th>Early Maladaptive Schema and Domains (YSQ-S2-extended)</th>
<th>CDCPD (n = 15)</th>
<th>CD (n = 23)</th>
<th>CDR (n = 13)</th>
<th>Test statistics</th>
<th>ω²</th>
<th>Contrast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disconnection and rejection</td>
<td>20.6 (4.9)</td>
<td>14.8 (5.3)</td>
<td>12.8 (3.8)</td>
<td>F(2, 48) = 10.37, p &lt; .001</td>
<td>0.269</td>
<td>C_DCPD &gt;</td>
</tr>
<tr>
<td>Abandonment / Instability</td>
<td>3.7 (1.5)</td>
<td>3.0 (1.5)</td>
<td>2.6 (1.0)</td>
<td>F(2, 48) = 2.31, p = .111</td>
<td>0.049</td>
<td>-</td>
</tr>
<tr>
<td>Mistrust / Abuse</td>
<td>3.7 (1.5)</td>
<td>2.6 (1.3)</td>
<td>2.5 (1.0)</td>
<td>ρ = .020</td>
<td>C_D, CDR</td>
<td>-</td>
</tr>
<tr>
<td>Emotional</td>
<td>4.5 (1.0)</td>
<td>3.4 (1.3)</td>
<td>3.1 (1.0)</td>
<td>F(2, 48) = 4.21, p = .021</td>
<td>0.114</td>
<td>C_DCPD &gt;</td>
</tr>
<tr>
<td>Deprivation</td>
<td>4.1 (15.0)</td>
<td>2.4 (1.0)</td>
<td>2.2 (1.4)</td>
<td>F(2, 48) = 10.47, p = .271</td>
<td>0.029</td>
<td>C_D, CDR</td>
</tr>
<tr>
<td>Defectiveness / Shame</td>
<td>3.5 (1.0)</td>
<td>2.5 (1.0)</td>
<td>2.1 (0.9)</td>
<td>F(2, 48) = 6.27, p = .177</td>
<td>0.278</td>
<td>C_DCPD &gt;</td>
</tr>
<tr>
<td>Social Isolation / Alieniation</td>
<td>3.2 (1.0)</td>
<td>2.6 (1.0)</td>
<td>2.4 (1.3)</td>
<td>ρ = .166</td>
<td>C_D, CDR</td>
<td>-</td>
</tr>
<tr>
<td>Vulnerability to Harm or Illness</td>
<td>2.0 (1.0)</td>
<td>2.0 (1.2)</td>
<td>1.8 (0.7)</td>
<td>F(2, 48) = 0.22, p = .806</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Failure</td>
<td>4.3 (1.5)</td>
<td>2.8 (1.3)</td>
<td>2.7 (1.4)</td>
<td>F(2, 48) = 6.40, p = .175</td>
<td>0.123</td>
<td>C_DCPD &gt;</td>
</tr>
<tr>
<td>Impaired limits</td>
<td>5.4 (1.6)</td>
<td>4.3 (1.3)</td>
<td>4.1 (1.3)</td>
<td>F(2, 48) = 4.09, p = .023</td>
<td>0.110</td>
<td>C_DCPD &gt;</td>
</tr>
<tr>
<td>Entitlement / Grandiosity</td>
<td>2.8 (1.0)</td>
<td>1.9 (0.9)</td>
<td>1.7 (0.9)</td>
<td>F(2, 48) = 2.29, p = .112</td>
<td>0.048</td>
<td>-</td>
</tr>
<tr>
<td>Insufficient Self-control / Self-discipline</td>
<td>3.2 (0.9)</td>
<td>2.4 (0.6)</td>
<td>2.4 (0.9)</td>
<td>F(2, 48) = 3.66, p = .096</td>
<td>0.096</td>
<td>C_DCPD &gt;</td>
</tr>
<tr>
<td>Other-directedness</td>
<td>10.6 (2.8)</td>
<td>9.1 (2.1)</td>
<td>9.2 (1.2)</td>
<td>F(2, 48) = 2.07, p = .136</td>
<td>0.040</td>
<td>-</td>
</tr>
<tr>
<td>Subjugation</td>
<td>3.5 (1.1)</td>
<td>2.0 (0.9)</td>
<td>2.0 (0.7)</td>
<td>F(2, 48) = 13.48, p = .001</td>
<td>0.329</td>
<td>C_DCPD &gt;</td>
</tr>
<tr>
<td>Self-sacrifice</td>
<td>3.5 (1.3)</td>
<td>4.0 (1.2)</td>
<td>3.5 (1.0)</td>
<td>F(2, 48) = 1.37, p = .263</td>
<td>0.014</td>
<td>-</td>
</tr>
<tr>
<td>Approval-seeking / Recognition-seeking</td>
<td>3.6 (1.3)</td>
<td>3.7 (1.3)</td>
<td>3.1 (0.8)</td>
<td>F(2, 48) = 1.51, p = .231</td>
<td>0.020</td>
<td>-</td>
</tr>
<tr>
<td>Overvigilance and inhibition</td>
<td>17.4 (3.6)</td>
<td>11.8 (4.0)</td>
<td>12.5 (3.2)</td>
<td>F(2, 48) = 11.23, p = .286</td>
<td>0.001</td>
<td>C_DCPD &gt;</td>
</tr>
<tr>
<td>Negativity / Pessimanism</td>
<td>4.9 (0.9)</td>
<td>3.6 (1.2)</td>
<td>3.8 (1.1)</td>
<td>F(2, 48) = 7.55, p = .001</td>
<td>0.204</td>
<td>C_DCPD &gt;</td>
</tr>
<tr>
<td>Emotional</td>
<td>3.7 (1.8)</td>
<td>2.2 (1.1)</td>
<td>2.4 (0.9)</td>
<td>F(2, 48) = 7.06, p = .002</td>
<td>0.192</td>
<td>C_DCPD &gt;</td>
</tr>
<tr>
<td>Inhibition</td>
<td>4.4 (1.2)</td>
<td>3.3 (1.2)</td>
<td>3.5 (1.1)</td>
<td>F(2, 48) = 3.71, p = .032</td>
<td>0.096</td>
<td>C_DCPD &gt;</td>
</tr>
<tr>
<td>Hypercriticalness</td>
<td>4.3 (1.1)</td>
<td>2.8 (1.3)</td>
<td>2.9 (1.4)</td>
<td>F(2, 48) = 7.03, p = .002</td>
<td>0.191</td>
<td>C_DCPD &gt;</td>
</tr>
</tbody>
</table>

Note. The cells vary slightly due to missing data. YSQ-S2-extended = Young Schema Questionnaire short form-extended
5.2 EARLY MALADAPTIVE SCHEMAS IN BORDERLINE PERSONALITY DISORDER AND CHRONIC DEPRESSION (STUDY II)

In Study II, patients with BPD and patients with chronic depression without personality disorder were compared in terms of EMSs and health status. As the groups were matched in terms of gender, there were no significant differences between the groups (83.3% women in BPD sample vs. 66.7% women in chronic depression sample), $\chi^2(1) = 2.22$, $p = .136$. In addition, there were no differences in terms of age, educational level or marital status. Mean 15D profiles of the two groups are presented in Figure 2. Patients with BPD were worse off compared to chronically depressed patients in two dimensions of the 15D: usual activities and distress, indicating poorer social functioning and higher levels of concurrent psychological distress.

Figure 2. Mean 15D profiles and scores of patients with borderline personality disorder and patients with chronic depression.
BPD patients showed a higher endorsement on eight EMSs compared to patients with chronic depression, whereas patients with chronic depression endorsed one EMS more severely than BPD patients (Table 5). After controlling for significant differences at concurrent levels of distress, patients with BPD showed higher EMS subscale scores only in three EMSs: insufficient self-control/self-discipline, $F(2, 57) = 9.36$, $p = .003$, $d = 0.82$; entitlement, $F(2, 57) = 8.52$, $p = .005$, $d = 0.77$; and subjugation, $F(2, 57) = 10.14$, $p = .002$, $d = 0.86$.

Table 5. Means and standard deviations for early maladaptive schema subscales in borderline personality disorder and chronic depression

<table>
<thead>
<tr>
<th>Early Maladaptive Schema (YSQ-S2-extended)</th>
<th>Borderline personality disorder $(n = 30)$</th>
<th>Chronic depression $(n = 30)$</th>
<th>$p$</th>
<th>$d$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Disconnection and Rejection</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abandonment/Instability</td>
<td>3.8 (1.2)</td>
<td>3.0 (1.5)</td>
<td>.030</td>
<td>0.59</td>
</tr>
<tr>
<td>Mistrust/Abuse</td>
<td>3.5 (1.6)</td>
<td>2.6 (1.2)</td>
<td>.012</td>
<td>0.64</td>
</tr>
<tr>
<td>Emotional Deprivation</td>
<td>4.0 (1.3)</td>
<td>3.3 (1.5)</td>
<td>.061</td>
<td>0.50</td>
</tr>
<tr>
<td>Defectiveness/Shame</td>
<td>3.4 (1.3)</td>
<td>2.4 (1.2)</td>
<td>.003</td>
<td>0.80</td>
</tr>
<tr>
<td>Social Isolation/Alienation</td>
<td>4.2 (1.4)</td>
<td>3.1 (1.4)</td>
<td>.004</td>
<td>0.79</td>
</tr>
<tr>
<td><strong>Impaired Autonomy and Performance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependence/Incompetence</td>
<td>2.8 (1.2)</td>
<td>2.4 (1.0)</td>
<td>.186</td>
<td>0.36</td>
</tr>
<tr>
<td>Vulnerability to Harm or Illness</td>
<td>3.0 (1.3)</td>
<td>2.7 (1.3)</td>
<td>.390</td>
<td>0.23</td>
</tr>
<tr>
<td>Enmeshment/Underdeveloped Self Failure</td>
<td>2.3 (1.4)</td>
<td>2.0 (1.1)</td>
<td>.322</td>
<td>0.24</td>
</tr>
<tr>
<td><strong>Impaired Limits</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entitlement/Grandiosity</td>
<td>2.4 (0.7)</td>
<td>1.8 (0.6)</td>
<td>.002</td>
<td>0.92</td>
</tr>
<tr>
<td>Insufficient Self-control / Self-discipline</td>
<td>3.4 (1.0)</td>
<td>2.5 (0.9)</td>
<td>$&lt;.001$</td>
<td>0.95</td>
</tr>
<tr>
<td><strong>Other-Directedness</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subjugation</td>
<td>3.1 (1.2)</td>
<td>2.1 (0.9)</td>
<td>$&lt;.001$</td>
<td>0.94</td>
</tr>
<tr>
<td>Self-sacrifice</td>
<td>3.1 (1.1)</td>
<td>3.9 (1.2)</td>
<td>.006</td>
<td>-0.69</td>
</tr>
<tr>
<td>Approval-seeking / Recognition-seeking</td>
<td>3.3 (1.0)</td>
<td>3.3 (1.0)</td>
<td>.926</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Overvigilance and Inhibition</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negativity/Pessimism</td>
<td>4.2 (1.3)</td>
<td>3.7 (1.2)</td>
<td>.142</td>
<td>0.24</td>
</tr>
<tr>
<td>Emotional Inhibition</td>
<td>3.0 (1.5)</td>
<td>2.1 (1.0)</td>
<td>.018</td>
<td>0.71</td>
</tr>
<tr>
<td>Unrelenting Standards / Hypercriticalness</td>
<td>3.7 (1.3)</td>
<td>3.3 (1.3)</td>
<td>.221</td>
<td>0.31</td>
</tr>
<tr>
<td>Punitiveness</td>
<td>3.2 (1.3)</td>
<td>2.9 (1.3)</td>
<td>.391</td>
<td>0.23</td>
</tr>
</tbody>
</table>

*Note.* YSQ-S2-extended = Young Schema Questionnaire short form-extended.
5.3 EARLY MALADAPTIVE SCHEMAS AND SUICIDAL IDEATION (STUDY III)

In Study III, the aim was to establish whether EMSs differentiate outpatients in treatment for depression depending on current suicidal ideation, and if these differences remain when the effects of other clinical variables are taken into account.

Current suicidal ideation was reported by 60.8% of patients from the MDD sample at the time of assessment of EMSs at follow-up. Those with suicidal ideation had suicidal ideation at the time of baseline assessment significantly more commonly than those without, \( \chi^2(1) = 26.14, p < .001 \). Out of those with current suicidal ideation, 83.3% \((n = 40)\) had suicidal ideation also at the time of the baseline assessment. Out of the 31 patients without suicidal ideation at the follow-up, 25.8% \((n = 8)\) had suicidal ideation at the time of the baseline assessment.

There were no statistically significant differences between the groups in terms of age, gender, marital status, the mean age at the first depressive episode or the number of lifetime depressive episodes. Those with current suicidal ideation met the diagnostic criteria for current episode of MDD more often than those without \((72.9\% \text{ vs. } 33.3\%)\), \( \chi^2(1) = 11.85, p < .001 \). In addition, those with suicidal ideation had more often comorbid Axis-II personality disorder \((35.4\% \text{ vs. } 12.9\%)\), \( \chi^2(1) = 4.89, p = .027 \), and current chronic depression or chronic depression in remission \((75\% \text{ vs. } 50\%)\), \( \chi^2(1) = 5.10, p = .024 \).

Those with current suicidal ideation were significantly more depressed than those without suicidal ideation at both baseline \((M_{\text{BDI}} = 31.1, SD = 8.2 \text{ vs. } M_{\text{BDI}} = 22.1, SD = 12.8)\), \( t(76) = 3.41, p < .001 \), and follow-up \((M_{\text{BDI}} = 27.7, SD = 9.7 \text{ vs. } M_{\text{BDI}} = 14.3, SD = 10.8)\), \( t(77) = 5.50, p < .001 \). Similarly, those with current suicidal ideation were significantly more hopeless than those without suicidal ideation at baseline \((M_{\text{HS}} = 14.1, SD = 4.6 \text{ vs. } M_{\text{HS}} = 8.6, SD = 4.6)\), \( t(75) = 5.19, p < .001 \) and follow-up \((M_{\text{HS}} = 12.6, SD = 5.6 \text{ vs. } M_{\text{HS}} = 6.3, SD = 4.4)\), \( t(76) = 5.34, p < .001 \). Patients with suicidal ideation scored significantly higher on 11 out of the 18 EMS subscales with at least moderate effect sizes (Table 6).

Because those with suicidal ideation were significantly more depressed and hopeless, BDI and HS scores were included as covariates in logistic models with significant EMS subscales as predictors of suicidal ideation. In the logistic models with BDI and HS, only the EMS vulnerability to harm or illness remained statistically significant in respect to suicidal ideation \((p = .037)\). The model was significant, \( \chi^2(3) = 32.31, p = .049 \), explaining 48.6% of the variance in suicidal ideation and correctly classified 88.9% of cases. Neither BDI \((p = .127)\) or HS \((p = .378)\) were significant in this model.

In additional analysis, comorbid personality disorder and chronic course of depression were added into the model as dichotomous variables. The final model was significant, \( \chi^2(5) = 33.13, p = .036 \), and explained 50.3% of the variance in suicidal
ideation and correctly classified 86.1% of cases. Vulnerability to harm or illness remained statistically significant with respect to suicidal ideation ($p = .043$) and BDI ($p = .270$), HS ($p = .358$), comorbid personality disorder ($p = .717$) or chronic course of depression ($p = .138$) were not significant in this model.

Table 6. Means and standard deviations for early maladaptive schema subscales in depressed patients by suicidal ideation

<table>
<thead>
<tr>
<th>Early Maladaptive Schema (YSQ-S2-extended)</th>
<th>With suicidal ideation ($n = 48$)</th>
<th>Without suicidal ideation ($n = 31$)</th>
<th>$p$</th>
<th>$d$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Disconnection and Rejection</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abandonment/Instability</td>
<td>3.2 (1.5)</td>
<td>2.6 (1.5)</td>
<td>.071</td>
<td>0.40</td>
</tr>
<tr>
<td>Mistrust/Abuse</td>
<td>3.0 (1.3)</td>
<td>2.1 (1.1)</td>
<td>.002</td>
<td>0.75</td>
</tr>
<tr>
<td>Emotional Deprivation</td>
<td>3.8 (1.3)</td>
<td>2.8 (1.5)</td>
<td>.004</td>
<td>0.71</td>
</tr>
<tr>
<td>Defectiveness/Shame</td>
<td>3.1 (1.5)</td>
<td>2.0 (1.0)</td>
<td>&lt;.001</td>
<td>0.86</td>
</tr>
<tr>
<td>Social Isolation/Alienation</td>
<td>3.7 (1.4)</td>
<td>2.4 (1.4)</td>
<td>&lt;.001</td>
<td>0.93</td>
</tr>
<tr>
<td><strong>Impaired Autonomy and Performance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependence/Incompetence</td>
<td>2.8 (1.1)</td>
<td>1.7 (0.9)</td>
<td>&lt;.001</td>
<td>1.09</td>
</tr>
<tr>
<td>Vulnerability to Harm or Illness</td>
<td>3.1 (1.2)</td>
<td>1.7 (1.0)</td>
<td>&lt;.001</td>
<td>1.27</td>
</tr>
<tr>
<td>Enmeshment/Underdeveloped Self</td>
<td>2.0 (1.1)</td>
<td>1.5 (0.8)</td>
<td>.062</td>
<td>0.52</td>
</tr>
<tr>
<td>Failure</td>
<td>3.3 (1.6)</td>
<td>2.5 (1.5)</td>
<td>.026</td>
<td>0.52</td>
</tr>
<tr>
<td><strong>Impaired Limits</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entitlement/Grandiosity</td>
<td>1.9 (0.8)</td>
<td>1.7 (0.7)</td>
<td>.127</td>
<td>0.27</td>
</tr>
<tr>
<td>Insufficient Self-control/ Self-discipline</td>
<td>2.7 (0.9)</td>
<td>2.3 (1.1)</td>
<td>.079</td>
<td>0.40</td>
</tr>
<tr>
<td><strong>Other-Directedness</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subjugation</td>
<td>2.5 (1.1)</td>
<td>1.9 (1.0)</td>
<td>.011</td>
<td>0.57</td>
</tr>
<tr>
<td>Self-sacrifice</td>
<td>4.0 (1.2)</td>
<td>3.4 (1.1)</td>
<td>.047</td>
<td>0.52</td>
</tr>
<tr>
<td>Approval-seeking / Recognition seeking</td>
<td>3.5 (1.0)</td>
<td>3.2 (1.2)</td>
<td>.331</td>
<td>0.27</td>
</tr>
<tr>
<td><strong>Overvigilance and Inhibition</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negativity/Pessimism</td>
<td>4.1 (1.1)</td>
<td>3.1 (1.4)</td>
<td>.001</td>
<td>0.79</td>
</tr>
<tr>
<td>Emotional Inhibition</td>
<td>2.6 (1.4)</td>
<td>2.3 (1.2)</td>
<td>.296</td>
<td>0.23</td>
</tr>
<tr>
<td>Unrelenting Standards/ Hypercriticalness</td>
<td>3.8 (1.3)</td>
<td>3.3 (1.3)</td>
<td>.073</td>
<td>0.38</td>
</tr>
<tr>
<td>Punitiveness</td>
<td>3.6 (1.3)</td>
<td>2.6 (1.3)</td>
<td>.001</td>
<td>0.77</td>
</tr>
</tbody>
</table>

*Note. YSQ-S2-extended = Young Schema Questionnaire short form-extended*
6 DISCUSSION

6.1 GENERAL DISCUSSION

The aim of this thesis was to explore EMSs, the namesake concept for schema therapy model by Young et al. (2003), in relation to two significant clinical concerns in depressive disorders and major areas of interest in schema model research: chronic course of depression and suicidal ideation. The first aim was to test assumptions inherent in the schema model by comparing EMSs across diagnostic groups in order to conceptualise whether and how EMSs relate to chronic depression. The second aim was to ascertain whether EMSs contribute to suicidal ideation in depressed patients.

The main contribution of Studies I–II concerns the focus on chronic depression at the cognitive level. Although the need for more tailored options of psychotherapy in the management of chronic depression has been highlighted due to aetiological and clinical features of chronic depression (Jobst et al., 2016) and the role of rigid cognitive structures has been of considerable interest in the persistent course of depression (Renner et al., 2013; Riso et al., 2003), there have been few studies exploring the cognitive aspects of chronic depression. By exploring EMSs with respect to comorbid personality disorder and remission status in Study I and comparing BPD and chronic depression in terms of EMSs in Study II, this thesis contributes to research on basic concepts of the schema model in chronic mental disorders.

The main finding of Study III is that, although concurrent severity of depression and hopelessness are the most robust predictors of suicidal thoughts in MDD patients, it is possible that other cognitive aspects contribute to suicidal ideation. This finding has implications for the assessment of suicidality and may potentially be of clinical importance in suicide prevention. In the section following, these findings are discussed in more detail with respect to previous research.

6.1.1 Early maladaptive schemas in relation to chronic depression

Previously, EMSs have shown notable relative stability over the course of evidence-based outpatient treatment for depression (Renner et al., 2012) and chronic depression has been associated with more severe EMS endorsement than episodic MDD (Riso et al., 2003). In the cognitive schema model for chronic depression, Renner et al. (2013) argue that EMSs constitute the proximal and modifiable cognitive vulnerability to chronic depression, which is influenced by distal risk factors, such as cluster C personality pathology and adverse early experiences. The schema model for chronic depression also presents that recovery from depressive symptoms itself would not affect EMSs without specific schema-focused intervention and thus, the
vulnerability for recurrence would remain high (Renner et al., 2013). In line with Renner et al. (2013), Study I showed that comorbid cluster C personality disorder was associated with higher EMS endorsement than that of chronically depressed patients without personality disorder, although there were no differences in the concurrent severity of depressive symptoms. In addition, even though patients remitted from chronic depression were significantly less depressed and had a higher degree of functioning, they showed similar EMS endorsement to currently chronically depressed patients. Similar findings have also been reported from a study on previously and currently depressed subjects with a history of single-episode or recurrent MDD (Halvorsen et al., 2009). Although the present study did not include longitudinal assessment of EMSs and the theoretical mediating role of EMSs on chronic depression and recurrence of depression needs to be further explored, the similarities in EMSs between remitted and currently chronically depressed patients are in line with propositions that EMSs may reflect underlying cognitive vulnerability to chronic depression (Renner et al., 2013; Riso et al., 2003).

According to Young et al. (2003), EMSs from the disconnection and rejection domain are commonly observed in patients with high psychological vulnerability and long-standing psychopathology. The severity of multiple EMSs, particularly those from disconnection and rejection and impaired autonomy and performance domains, has been established in BPD compared to MDD and other mental disorders (Barazandeh et al., 2016) and some authors have also viewed EMSs from disconnection and rejection domain as specific to BPD (Bach & Bernstein, 2018; Sempertegui et al., 2013). The role of EMSs in BPD has also been highlighted by results showing that comorbid MDD does not affect the EMS endorsement in BPD patients (Lawrence et al., 2011; Unoka et al., 2015). However, EMSs from disconnection and rejection and impaired autonomy and performance domains have also been proposed to increase vulnerability to depression and persistence of depression (Halvorsen et al., 2009; Hoffart et al., 2005; Young, 1999).

In Study II, a sample formed from currently and previously chronically depressed patients was compared to a sample of BPD patients to further elucidate EMSs in chronic depression. At face value, there were differences in several EMSs between the groups, including four out of the five belonging to the disconnection and rejection domain, but not in EMSs from impaired autonomy and performance domain. However, the majority of differences between the groups diminished when the effects of concurrent psychological distress were taken into account. This finding hinders conclusions on specificity of EMSs in BPD and points to potential commonalities between the disorders. Looking at these findings through schema model lens, one hypothetical explanation for these similarities could be related to the similar underlying genetic, early environmental, or temperamental factors between BPD and chronic depression (Klein & Schwartz, 2002), which based on Young's model could be speculated to result in similar cognitive patterns in adulthood.
Despite findings from Study II indicate that chronic depression and BPD might be more similar in terms of EMSs than MDD and BPD (Barazandeh et al., 2016), it is also important to consider the face value differences in EMS endorsement and psychological distress. For instance, because intense distress is common in BPD patients (Jovev & Jackson, 2006), it could be argued that high distress in BPD patients reflects the more intense activation of EMSs, a feature which has also been proposed as a defining characteristic of BPD in the schema model literature (Bach & Bernstein, 2018). On a more general note, although there is empirical support for the role and stability of EMSs in depressive disorders and personality disorders, the interplay between EMSs and severity of symptoms is complex both theoretically and in terms of research methods (Sempertegui et al., 2013). As there is still limited research into relations between EMSs and psychological symptoms over time, there is a need for further studies focusing on long-term relations between EMSs and symptoms across chronic mental disorders. Nevertheless, the EMS endorsement in Study II was, apart from approval-seeking EMS, uniformly higher for both groups than that reported previously in the Finnish population (Leppänen et al., 2015; Saariaho, Saariaho, Karila, & Joukamaa, 2011), which supports the overall endorsement of EMSs in both disorders.

With respect to previous findings in depressive disorders, EMSs from domains of disconnection and rejection and impaired autonomy and performance have been most consistently associated with MDD and depressive symptoms (Hawke & Provencher, 2011b), and the domains of disconnection and rejection, overvigilance and inhibition and impaired autonomy and performance have been shown to differentiate chronic depression from episodic depression, regardless of the severity of the depression or personality disorder symptoms (Riso et al., 2003). Considering previous research and the findings from Study I, severity of EMSs in depressed patients appears to increase depending on the persistence of the depression and presence of personality pathology. While EMSs have been studied in a range of mental disorders, only a few have systematically taken into account the chronicity of disorder or comorbid disorders, despite that in the schema model EMSs are related to enduring psychological problems. Overall, findings from Study I are consistent with prior literature pointing to the severity of EMSs in personality disorders (Nordahl, Holthe, & Haugum, 2005), even in chronic Axis I disorders, and further highlight the need to consider personality disorders and personality features when exploring EMSs in depressive disorders. The commonalities between remitted and currently chronically depressed patients in Study I and the severity of EMSs in BPD and chronic depression in Study II are consistent with previous findings that EMSs may be particularly related to long-standing psychological difficulties (Barazandeh et al., 2016; Riso et al., 2003).
6.1.2 Early maladaptive schemas and suicidal ideation

In the study by Ahmadpanah et al. (2017) on MDD patients with a history of suicide attempts, all EMSs from the domains of disconnection and rejection and impaired autonomy and performance were associated with suicide attempts regardless of depressive symptoms. In Study III, there were significant differences in the depressive symptom severity of those with suicidal ideation and those without. However, unlike Ahmadpanah et al. (2017), in Study III the role of hopelessness was also considered. Overall, the EMSs endorsed by those with suicidal ideation were largely consistent with EMSs associated with depressive symptoms and represented the disconnection and rejection and impaired autonomy and performance, but only vulnerability to harm or illness EMS associated with current suicidal ideation independently from depression, hopelessness and clinical variables.

The vulnerability to harm or illness EMS concerns catastrophising beliefs and exaggerated fears of irrationally negative forecasted life-events, such as imminent medical, emotional or external catastrophes (Young et al., 2003). Previously, Jager-Hyman et al. (2014) showed that catastrophising cognitive distortions are more common in psychiatric patients with a history of suicide attempts than psychiatric controls and that the cognitive distortions are uniquely associated with suicide attempt status above and beyond the contribution of depressive symptoms and hopelessness. Although preliminary, these results, together with those from Study III, highlight the role of catastrophic cognitions as a potentially important individual factor in the continuum of suicidality. With respect to clinical implications, findings are consistent with notions that, in depressed patients, suicidal thinking might be related to cognitive aspects not inherent to depressive disorders, and suicidality should be targeted in its own right (Wenzel & Jager-Hyman, 2012).

6.2 STRENGTHS AND LIMITATIONS

This study has strengths and limitations that need to be considered. The most significant limitations of Studies I-III are the small sample sizes and assessment of EMSs at only one time point. Assessment of EMSs limits the interpretability of findings, as no causal conclusions can be made on the longitudinal effects of EMSs on the course of depression, or the effects of naturalistic outpatient treatment on EMS endorsement. In addition, studies did not include comparisons with non-chronic depression or healthy controls, which would have further improved the interpretability of findings.

Particularly in Study I, the groups were small due to strict inclusion criteria. Small sample size reduces the power of statistical analyses and increases the risk of type II error, or failure to reject a false null hypothesis, and findings should hence be considered preliminary. A larger sample size in Study I would have increased...
statistical power and allowed for more detailed statistical analysis, for instance to take into account the effects of concurrent symptoms in EMS endorsement or overlap with EMSs, which might have led to a more detailed description of differences and commonalities between groups. Similarly, in Study III potential overlap between EMSs was not controlled for in logistic models, which may have affected the results. Additionally, in Study II, the inclusion criteria may have influenced findings. For instance, the exclusion of bipolar patients from the BPD group may have led to an atypical presentation of BPD and overinclusion of MDD patients, which limits the generalisability of findings.

With respect to Studies I–II, the naturalistic follow-up sample of depressed outpatients and the use of two separate diagnostic assessment points to determine the chronicity of depression and comorbid personality disorder is a novel approach in the schema model research. Although limited by the sample size, this design offered a possibility of reliably comparing chronically depressed and remitted patients and excluding acute forms of depression. In addition, in Study I, the overall functioning of the patients was assessed using the GAF, which provided additional observer-rated perspective on chronic depression at group level (Söderberg, Tungström, & Armelius, 2005). However, because the MDD sample was collected in 2011 and the BPD sample in 2010, the DSM-IV criterion was applied to all diagnoses. Therefore, this study did not include the current PDD diagnosis. Changes have also been made to the diagnostic criteria for personality disorders in the DSM-5 (APA, 2013), and future studies using DSM-5 criteria for PDD and personality disorders are needed. In addition, in this thesis personality disorders were based on diagnostic categories rather than symptoms or features and therefore whether groups studied show similar personality features was not analysed.

Regarding the statistical analysis used, in Study II the use of the 15D to control for symptoms, and in Study III taking into account the effects of depressive symptoms and hopelessness can be seen as both strengths and limitations. Controlling for covariates can be viewed as a controversial practice, as it may have altered the nature or concepts of mental disorders (Miller & Chapman, 2001). This is particularly relevant for Study II, because of the cross-sectional design and the complex nature of BPD (Köhling et al., 2015). In modern conceptualisations of BPD (APA, 2013; Linehan, 1993), affective dysregulation and pervasive pattern of temporal instability in several symptom domains are considered as defining features of BPD. Therefore, relying on one-time, cross-sectional assessment and controlling for psychological distress as a potential state related factor creating response bias may have actually altered the fundamental nature of BPD (Köhling et al., 2015). On the other hand, BPD patients tend to report higher levels of severity on self-rated inventories compared to observer-rated measures of symptoms (Stanley & Wilson, 2006; Wilson et al., 2007), and as there is considerable evidence that EMSs are to some extent sensitive to current levels of psychological symptoms, the use of covariates has been recommended.
when exploring the role of EMSs in cross-sectional settings (Riso et al., 2003). Overall, this calls for future tests of temporal stability of EMSs in relation to symptoms through diverse methodology, for instance, using a series of measurements over time.

In terms of EMSs, depressive symptoms, hopelessness, suicidal ideation and health status, the present study relied on self-report inventories, which needs to be taken into account when considering findings. Overall, the inventories used have shown good psychometric properties and are considered valid. A benefit of the present study is the use of YSQ-S2-extended as a measure of EMSs, as it includes all the 18 EMSs included in the contemporary schema model. The YSQ-S2-extended has shown good validity and reliability in the Finnish language (Saariaho et al., 2009) and good internal consistency in Studies I-III. However, exclusive reliance on self-report measures in EMS research is not without its problems. Young’s conceptualisation of EMSs as developmental and highly accessible cognitive structures originates from psychotherapeutic treatment rather than cognitive science. Therefore, compared to research on Beck’s schema model and its contemporary variations, information-processing paradigms in EMS research have not been employed (Clark & Guysitt, 2016). The empirical case for EMSs and validity of Young’s model is still far from complete and further research using methods of cognitive science, including experimental designs, are needed with regards to the schema model and measurement of EMSs.

The validity of BDI-21 and HS have been well established, and in the present study both BDI-21 and HS showed high internal consistency comparable with those previously reported in Finnish clinical populations (Viinamäki et al., 2004; Haatainen et al., 2004). In terms of the 15D, several studies have supported the validity and reliability of the instrument and the use of population-based preference weights used to calculate the scores (Saarni et al., 2006; Sintonen, 1994; Sintonen, 2001). However, the use of clinician-rated symptoms could have provided an added dimension to interpretability of findings, for instance, in terms of potential state-related response bias in the YSQ-S2-extended. Similarly, although the BDI-21 is among the most commonly used self-report inventories for severity of depressive symptoms, it has been argued that it overemphasises cognitive symptoms of depression and thus not adequately cover the full range of symptoms of MDD (Köhling et al., 2015; Riso et al., 2003). In Study III, a limited assessment of suicidal ideation was used. Although suicidal ideation has been commonly assessed using categorical variable based on single BDI-21 item (Casey et al., 2008; Hintikka et al., 1998; Klomke et al., 2008), the use of interview-based assessment of suicidal ideation or use of structured scale such as the Scale for Suicidal Ideation (Beck, Kovacs, & Weissman, 1979) would have offered a more detailed assessment of suicidal thoughts and take better into account the complexity of suicidality (Batterham et al., 2015).
6.3 IMPLICATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

This thesis has theoretical and practical implications. First, these findings offer conceptual insight into the cognitive aspects of chronic depression and suicidal ideation. By showing that EMSs, which, based on previous research seem to represent developmental rather than state-related structures, are equally pronounced in currently and remitted chronically depressed patients, results highlight the possibility that EMSs may act as potential underlying vulnerability factors of chronic depression. From a clinical perspective, the equally high endorsement of dysfunctional cognitive patterns between currently chronically depressed and remitted patients and the more severe EMS endorsement observed in patients with cluster C personality disorder underscores the importance of not only focusing on symptoms of depression, but also to consider assessing and addressing cognitive factors which may contribute to maintenance of symptoms. The similarities between BPD and chronic depression in terms of EMSs suggests that similar EMSs may associate with different forms of persistent psychological problems. Therefore, as discussed earlier, for example, by Lawrence et al. (2011) as well as Bach and Bernstein (2018), assessing EMSs may aid in the case of conceptualising enduring psychological problems. In terms of suicidal ideation, the results showed that beliefs related to catastrophic thinking independently associate with suicidal ideation in depressed patients, thus replicating previous findings from individuals with mental disorders who attempted suicide (Jager-Hyman et al., 2014). Clinically, these findings indicate the potential importance of addressing the tendency to catastrophising as a way of managing suicidal thinking.

There are a number of potential areas for future research, which are necessary in relation to depressive disorders in general and specifically in relation to the schema model and the use of schema therapy in the treatment of chronic depression. First, studies with larger sample sizes and a more comprehensive assessment of cognitive factors, preferably using longitudinal designs, are needed in order to further explore basic assumptions of the schema model in relation to chronic mental disorders. Longitudinal study designs in naturalistic settings could aid in determining how EMSs and other measures of cognitive factors, such as dysfunctional attitudes or negative thinking styles, relate with the course of depression or suicidality over time to establish whether cognitive factors serve as aetiological or maintaining factors. In addition, the role of schema modes, a central but empirically less established component of Young’s model (Bach & Bernstein, 2018), has been only marginally explored in depressed patients. Although there is evidence that cognitive factors differentiate chronic depression from episodic depression (Brockmeyer, Kulessa, Hautzinger, Bents, & Backenstrass, 2015; Riso et al., 2003), longitudinal research is needed to determine whether certain cognitive characteristics uniquely predict the chronic course.
of depression and suicidal intent or suicide attempt. This could improve clinical interventions either by distinguishing individuals in high risk or allowing the development of more suitable treatment options specifically targeting the individual needs of patients.

Currently, there is only limited evidence supporting the acceptability or feasibility of schema therapy in chronic depression and in the only RCT focusing on MDD, traditional CBT resulted in a similar symptom reduction to schema therapy. Although the schema model appears to target empirically established risk factors of chronic depression, treatment studies, particularly RCTs with longer follow-up periods, are needed to establish whether schema therapy is effective in the management of chronic depression. Future RCT designs should also include assessment of EMSs over treatment time in order to determine whether altering EMSs is specific to schema therapy or whether alleviation of EMSs is related to more general mechanisms of change across different forms of psychotherapy.

### 6.4 CONCLUSIONS

In conclusion, this thesis focused on how EMSs relate with the chronic course of depression and suicidal ideation in depressed patients. In line with a hypothesis derived from the schema model, results showed that chronically depressed patients with comorbid cluster C personality disorder were more maladaptive with respect to EMSs than patients without personality disorders, and that patients remitted from chronic depression showed similar endorsement of EMSs to that of currently chronically depressed patients without personality disorder. While previous research has shown that BPD is particularly related to EMSs, when comparing EMS endorsement between chronically depressed patients and patients with BPD, there were more similarities than differences between the disorders when the effects of concurrent distress were taken into account. These results are in line with proposed cognitive vulnerability factors for chronic depression and merit further research into cognitive aspects of persistent depression. EMSs differentiating patients with and without suicidal ideation were largely accounted for by concurrent severity of depressive symptoms and hopelessness, but, similarly to prior research, catastrophising differentiated the groups. This finding is consistent with notions that in depressed patients suicidal thinking might be related to cognitive aspects not inherent in depressive disorders, and that the tendency to catastrophising could be particularly associated with suicidal thinking.
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NIKO FLINK

According to the schema model, persistent psychological problems are developed and maintained through stable cognitive structures, early maladaptive schemas (EMSs). This study explores EMSs in relation to key clinical concerns in depressive disorders: chronic course of depression and suicidal ideation. Exploring the associations between EMSs, chronic depression and suicidality offers insights into cognitive aspects of depression and may aid in the assessment and treatment of depression.