

Early Maladaptive Schemas, Depression Severity, and Risk Factors for Persistent Depressive Disorder: a Cross-sectional Study

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Abstract

Objective: To investigate associations of the five early maladaptive schemas (EMS) domains with depression severity by comparing patients with persistent depressive disorder (PDD), patients with major depressive disorder (MDD), and controls with no psychiatric disorders.

Methods: Patients with PDD (n = 30), patients with MDD (n = 24), and controls with no psychiatric disorders (n = 30) were recruited. Participants were assessed using the Mini-International Neuropsychiatric Interview 5.0 version (MINI), the Beck Depression Inventory-Second Edition (BDI-II), and the Young Schema Questionnaire-3rd Edition Short Form (YSQ-S3).

Results: The five EMS domains (YSQ-S3 score) significantly correlated with depression severity (BDI-II score), with correlation coefficients ranging from 0.583 to 0.788. After controlling for age, education, and sex, the two best predictors of depression severity were domains 'over-vigilance and inhibition' and 'disconnection and rejection'. For domains of disconnection and rejection, impaired autonomy and performance, and over-vigilance and inhibition, the total YSQ-S3 score was significantly higher in the PDD group than both the MDD and control groups. For the domain of impaired limits, the total YSQ-S3 score was significantly higher in both the PDD and MDD groups than the control group.

Conclusion: All five EMS domains correlated significantly with depression severity. PDD and MDD differed in psychopathology. The EMS domains of disconnection and rejection, impaired autonomy and performance, and over-vigilance and inhibition may be specific risk factors for PDD.

Key words: Depressive disorder; Risk factors

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Introduction

Chronic depression is defined as having 2 years of continuous depressive symptoms.^{1,2} According to DSM-IV-TR, chronic depression diagnoses consist of dysthymic disorder, chronic major depressive episode, major depressive disorder with antecedent dysthymic disorder (double depression), major depressive episode in partial remission, and recurrent major depressive disorder without full inter-episode recovery.³ However, these diagnoses have few differences and can be viewed as a single broad condition.^{4,6} According to DSM-V, persistent depressive disorder (PDD) is used to include all these diagnoses of chronic depression.⁷

Early detection of high-risk patients is important in mental health services, as about 25% of depressed patients develop chronic depression in their lifetime.^{8,9} Risk factors of chronic depression include younger age of onset,¹⁰ familial psychopathology, childhood adversity, depressive personality, rumination, chronic stress, low social support, and interpersonal difficulties.^{11,12} In a representative sample in the United States, predictors for chronic depression were female, having never married, having two or more chronic medical conditions, experiencing activity limitation, and less contact with family.¹³

There are various cognitive models of depression, including the cognitive triad, hopelessness theory, and rumination¹⁴⁻¹⁶ as well as early maladaptive schema (EMS), which is defined as self-defeating, emotional and cognitive patterns that begin early in development and repeat throughout life.¹⁷ Early interaction with caregivers and traumatic experience contribute to the development of EMS.¹⁷⁻¹⁹ Accordingly, schema therapy is introduced for various mental disorders such as depression and personality disorders.^{17,20}

A total of 18 EMS were proposed and categorised in five domains:¹⁷

(1) Disconnection and rejection: it indicates that the expectation of a person's needs for security, safety, stability, nurturance, empathy, sharing of feelings, acceptance, and

respect may not be met. This domain includes the schemas of abandonment/instability, mistrust/abuse, emotional deprivation, defectiveness/shame, and social isolation/alienation.

(2) Impaired autonomy and performance: it involves expectations that a person possesses about oneself and the environment that interferes with his or her perceived ability to separate, survive, function independently or perform successfully. This domain includes the schemas of dependence/incompetence, vulnerability to harm or illness, enmeshment/undeveloped self, and failure.

(3) Impaired limits: it indicates the deficiency of a person in internal limits, responsibility to others, or long-term goal orientation. This domain includes the schemas of entitlement/grandiosity and insufficient self-control/self-discipline.

(4) Other-directedness: this is the excessive emphasis of a person on suppressing one's spontaneous feelings, impulses, and choices or on meeting rigid internalised rules and expectations about performance and ethical behaviour at the expense of happiness, self-expression, relaxation, close relationships, or health. This domain includes the schemas of negativity/pessimism, emotional inhibition, unrelenting standards/hypercriticalness, and punitiveness.

(5) Over-vigilance and inhibition: it involves a person's excessive focus on the desires, feelings, and responses of others, at the expense of one's own needs, in order to gain love and approval, maintain one's sense of connection, or avoid retaliation. This domain includes the schemas of subjugation, self-sacrifice, and approval-seeking/recognition-seeking.

Depression severity is associated with EMS.^{18,19,21,22} The domains of disconnection and rejection, impaired autonomy and performance, and over-vigilance and inhibition are more elevated in patients with chronic depression than in patients with non-chronic depression.²³ Schema therapy is a successful treatment for depression.^{17,24} Patients with bipolar disorder differ from patients with major depressive disorder (MDD) in terms of score in some EMS domains.²⁵ However, more studies are needed to determine the cognitive risk factors for chronic depression.^{10,12}

The five EMS domains are categorised through robust psychometric methods and represent focused and comprehensive enduring cognitive patterns.^{17,23} This study aimed to investigate associations of the five EMS domains with depression severity by comparing patients with PDD, patients with MDD, and controls with no psychiatric disorders. We hypothesised that EMS domains are associated with depression severity, and that scores of EMS domains differ among the three groups.

Methods

This study was approved by institutional review board of Taipei Veterans General Hospital, Taoyuan Branch. The Declaration of Helsinki was followed. Informed consent was obtained from each participant. Patients with PDD

($n = 30$), patients with MDD ($n = 24$), and controls with no psychiatric disorders ($n = 30$) were recruited through advertisement. Those with depression were inpatients or outpatients of the hospital, whereas controls were nearby residents. Patients were excluded if they had a brain injury history, neurocognitive disorder (dementia), intellectual disability, bipolar and related disorders, or schizophrenia spectrum or other psychotic disorders. Only a few patients had comorbidity of substance-related disorders or anxiety disorders. All patients were on medication at the time of data collection. Participants were assessed using the Mini-International Neuropsychiatric Interview 5.0 version (MINI),²⁶ the Beck Depression Inventory-Second Edition (BDI-II),²⁷ and the Young Schema Questionnaire-3rd Edition Short Form (YSQ-S3).²⁸

The MINI was used to confirm the diagnosis of depression made by psychiatrists. It was established according to the DSM-IV and has the advantages of brevity, high sensitivity, high specificity, and ease of administration, and can be completed in about 15 to 20 minutes. To comply with DSM-V diagnostic criteria for PDD, the question of whether having depressive mood most of the time for the recent 2 years was changed to whether having depressive mood most of the time for at least 2 years in the past. In addition, having MDD did not rule out PDD.

The self-report BDI-II was used to assess depression severity and has good reliability and validity. It consists of 21 items; each item is rated on a 4-point scale ranging from 0 to 3. The maximum total score is 63; higher scores indicate higher severity.

The YSQ-S3 was used to assess the 18 schemas in five domains of EMS. The third edition reveals more subtleties of each schema and provides more detailed information about the examinee, compared with previous versions.¹⁷ It has satisfactory reliability and validity for both the long and short forms^{17,29-33} and for different languages.^{32,34-39} The YSQ-S3 comprises 90 items; each is rated on a 6-point scale, ranging from 'completely untrue of me' to 'describes me perfectly'. The YSQ-S3 was translated into Chinese via rigorous forward and backward translation process.

Data were analysed using SPSS (version 20, IBM, Armonk [NY], US). Group characteristic differences were assessed using post-hoc comparisons (Games-Howell test). Associations of EMS domains with depression severity were assessed using Pearson correlations and stepwise regression. Scores of the EMS domains among the three groups were compared using the multivariate analysis of covariance and univariate analysis of covariance, with age and depression severity as control variables.

Results

Patients with PDD, patients with MDD, and controls with no psychiatric disorders were comparable except that patients with PDD and patients with MDD were older than controls, and that depression severity (BDI-II) and longest depressive episode was higher in patients with PDD than in

patients with MDD (Table 1).

The internal consistency (Cronbach alpha) of the five EMS domain scores (disconnection and rejection, impaired autonomy and performance, impaired limits, other-directedness, and over-vigilance and inhibition) and total score was 0.943, 0.919, 0.804, 0.821, 0.910, and 0.974, respectively.

The five EMS domains (YSQ-S3 score) significantly correlated with depression severity (BDI-II score), with correlation coefficients ranging from 0.583 to 0.788 (Table 2).

Stepwise regression was conducted, with depression severity (BDI-II) as the dependent variable and EMS domains as predictors. As higher BDI-II score correlated

with older age ($r = 0.240, p = 0.028$), lower education ($r = -0.256, p = 0.019$), and female sex ($r = 0.250, p = 0.022$), these variables were controlled. The two best predictors of depression severity were domains ‘over-vigilance and inhibition’ and ‘disconnection and rejection’ (Table 3).

The total YSQ-S3 scores (for EMS domains) of the three groups were compared using multivariate analysis of covariance. Age and BDI-II score were controlled as covariates. The Wilks’ Lambda for EMS domains was 0.691 ($F = 3.050, p = 0.002$). Univariate analysis of covariance was conducted for each of the EMS domains, with age and BDI-II score as covariates. Bonferroni correction was used for post-hoc comparisons. For domains of disconnection and rejection, impaired autonomy and performance, and

Table 1. Clinical characteristics of participants.

Characteristic	Persistent depressive disorder (n = 30)*	Major depressive disorder (n = 24)*	Control (n = 30)*	Group comparison	p Value
Age, y	50.70 ± 10.78	51.54 ± 12.78	42.10 ± 15.10	F(2,81) = 4.61	0.013
Education, y	10.57 ± 4.72	11.33 ± 4.54	12.60 ± 4.40	F(2,81) = 1.52	0.225
No. of males:females	9:21	9:15	12:18	$\chi^2(2) = 0.70$	0.705
Beck Depression Inventory-2nd Edition	38.97 ± 10.94	28.67 ± 12.96	2.97 ± 2.81	F(2,81) = 109.54	< 0.001
Longest depressive episode, mo	137.40 ± 108.39	6.79 ± 4.45	-	t(1,52) = 6.59	< 0.001

* Data are presented as mean ± standard deviation or No. of participants

Table 2. Correlations between depression severity and the five early maladaptive schema domains

Early maladaptive schema domain	Beck Depression Inventory-2nd Edition	Early maladaptive schema domain				
		Disconnection and rejection	Impaired autonomy and performance	Impaired limits	Other-directedness	Over-vigilance and inhibition
Disconnection and rejection	0.774 (p < 0.001)					
Impaired autonomy and performance	0.690 (p < 0.001)	0.827 (p < 0.001)				
Impaired limits	0.587 (p < 0.001)	0.724 (p < 0.001)	0.629 (p < 0.001)			
Other-directedness	0.583 (p < 0.001)	0.720 (p < 0.01)	0.668 (p < 0.001)	0.650 (p < 0.001)		
Over-vigilance and inhibition	0.787 (p < 0.001)	0.855 (p < 0.001)	0.750 (p < 0.001)	0.676 (p < 0.001)	0.797 (p < 0.001)	
Overall	0.788 (p < 0.001)	0.954 (p < 0.001)	0.895 (p < 0.001)	0.788 (p < 0.001)	0.841 (p < 0.001)	0.928 (p < 0.001)

over-vigilance and inhibition, the total YSQ-S3 score was significantly higher in the PDD group than both the MDD and control groups. For the domain of impaired limits, the total YSQ-S3 score was significantly higher in both the PDD and MDD groups than the control group (Table 4).

Discussion

Our study confirmed that the EMS domains (YSQ-S3 score) correlated with depression severity and that YSQ-S3 score differed significantly among patients with PDD, patients with MDD, and controls with no psychiatric disorders. All five EMS domains correlated moderately to strongly with depression severity, consistent with previous studies that used the first version of the YSQ to assess EMS domains.^{18,19,21,22} In the third version, the number of EMS increased from 16 to 18, and the domains ‘undesirability’

and ‘restricted self expressed’ were replaced with ‘over-vigilance and inhibition’, and the domain ‘other-directedness’ was added. In our study, the mean patient age was >50 years but it was <40 in previous studies. Stepwise regression analysis showed that the two best predictors of depression severity were domains ‘over-vigilance and inhibition’ and ‘disconnection and rejection’. Clinicians should assess the EMS of patients to identify those who are prone to have more severe depression.

This study focused on the cognitive aspects of chronic depression. Depression was more severe in patients with PDD than in patients with MDD after controlling for age and depression severity, particularly in the domains of disconnection and rejection, impaired autonomy and performance, and over-vigilance and inhibition. This was consistent with results in a previous study²³ that used the first version of the YSQ and a factor structure of four domains

Table 3. Stepwise regression analysis of depression severity with early maladaptive schema domains as predictors

Step	Predictor	B (standard error)	β	t (p Value)	ΔR^2	R ²
1	Constant	1.548 (15.628)		0.099 (p = 0.921)	0.125	0.125
	Age	0.258 (0.164)	0.191	1.571 (p = 0.120)		
	Education	-0.380 (0.513)	-0.095	-0.742 (p = 0.460)		
	Gender	8.295 (4.259)	0.218	1.948 (p = 0.055)		
2	Over-vigilance and inhibition	0.704 (0.062)	0.756	11.356 (p < 0.001)	0.543	0.668
3	Disconnection and rejection	0.242 (0.084)	0.353	2.879 (p = 0.005)	0.032	0.699

Table 4. Univariate analysis of covariance for early maladaptive schema domains among participants.

Early maladaptive schema domains	Mean \pm SD domain score of Young Schema Questionnaire-3rd Edition Short Form			SS _{group} / SS _{error}	df _{group} / df _{error}	F (p Value)	Post-hoc comparison
	Persistent depressive disorder (PDD)	Major depressive disorder (MDD)	Control				
Disconnection and rejection	91.77 \pm 22.43	62.96 \pm 12.92	40.97 \pm 8.68	6270.5 / 17301.4	2/79	14.32 (p < 0.001)	PDD > MDD, control
Impaired autonomy and performance	66.60 \pm 20.66	48.75 \pm 12.70	32.47 \pm 6.64	2365.5 / 15803.7	2/79	5.91 (p = 0.004)	PDD > MDD, control
Impaired limits	34.90 \pm 8.18	29.67 \pm 8.84	21.60 \pm 5.88	411.7 / 4135.7	2/79	3.93 (p = 0.024)	PDD, MDD > control
Other-directedness	57.77 \pm 13.93	50.13 \pm 7.66	40.27 \pm 8.00	502.7 / 8257.7	2/79	2.41 (p = 0.097)	-
Over-vigilance and inhibition	83.00 \pm 16.62	66.25 \pm 10.18	46.73 \pm 8.74	1752.5 / 10568.4	2/79	6.55 (p = 0.002)	PDD > MDD, control

(without other-directedness domain) and included patients with DSM-IV dysthymic disorder. The present study used the YSQ-S3 and DSM-V diagnostic criteria for PDD. Compared with patients with MDD, those with PDD are more sensitive to social rejection, interpersonal instability, failure, vulnerability in self-functioning, subjugation, and approval-seeking. All these may in turn trigger more dysfunctional responses and maladaptive coping styles. According to the theory of development of EMS, patients with PDD may suffer more childhood adversity than those with MDD.^{11,17} Patients with PDD usually possess rigid internalised expectations and believe in their impairment in self-regulation.²³ Thus, domains disconnection and rejection, impaired autonomy and performance, and over-vigilance and inhibition may be specific cognitive risk factors for PDD. Nonetheless, further research with a large sample is needed to confirm this possibility.

There are several limitations to this study. Participants were recruited by purposive sampling and had potential bias. The sample was small and consisted of depressed patients aged 40 to 60 with high school to college education. Some patients with PDD or MDD had comorbidity of substance-related disorders or anxiety disorders and may have resulted in confounding effects. Other possible confounding variables such as family history of depression, medical illness, and social support were not examined. The cross-sectional design cannot determine causality. The self-reported instruments rely on the memory of the participants which might be inaccurate.⁴⁰

Conclusion

All five EMS domains correlated significantly with depression severity. PDD and MDD differed in psychopathology. The EMS domains of disconnection and rejection, impaired autonomy and performance, and over-vigilance and inhibition may be specific risk factors for PDD.

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Declaration

All authors have no conflicts of interest to disclose.

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