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# Core beliefs and self-schematic structure in depression

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This article reviews recent research on core beliefs (i.e., early maladaptive schemas; EMS) and self-schema structure in depression. The empirical research supports these variables as vulnerability factors for depression. Whereas EMS operate independently of stress, cognitive organization appears to influence depression in a manner consistent with a diathesis–stress model. Recent research has also explored predictors of EMS and schema structure. Specifically, childhood adversity (e.g., emotional maltreatment, peer rejection) is associated with negative self-schemas and core beliefs. Schema beliefs and structure also mediate the relation between early adversity and subsequent depression. Fortunately, these deeper cognitions appear to be modifiable by psychological and pharmacological treatments. Future research is needed to elucidate the mechanisms by which self-schemas become consolidated over time and how they are optimally changed.

## Addresses

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Available online 20th December 2014

<http://dx.doi.org/10.1016/j.copsyc.2014.12.008>

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## Introduction

Beck proposed a hierarchical classification of cognition, ranging from deeper structures to more surface-level thoughts [1,2,3]. Schemas represent the deepest level of thinking and are purported to play a critical role in the development of depression. Self-schemas — well-organized, internal representations of self — consist of both propositional (content) elements, such as core beliefs, and structural (organization) properties. Through experience and interpretation of past and ongoing events, such content becomes increasingly consolidated in the belief system of individuals vulnerable to depression, and influences the subsequent appraisal and organization of new experiences. Once activated by life-stress, self-schemas also impact the emergence of more proximal cognitions (e.g., negative automatic thoughts). Insecure attachment experiences and maltreatment encompass some of the early predictors of the development of a negative belief system [4,5,6].

A number of variables have been studied in the context of cognitive vulnerability to depression [7]; however, we focus on the content and structure of self-schemas. Recent research on early maladaptive schemas (i.e., deeper core beliefs) and the structure of self-referent content is reviewed. After defining the specific construct of interest, we discuss the current empirical status, highlight predictors and outline the potential modifiability of each vulnerability factor. We conclude with suggestions for further research.

## Early maladaptive schemas

Early maladaptive schemas (EMS; [8]) represent an extension of Beck's cognitive theory of depression and account for the developmental origins of core beliefs. EMS are rigid and pervasive absolutist beliefs about self that originate in childhood in response to ongoing aversive relational patterns, and are elaborated on throughout life. EMS, which serve as templates for processing later experiences, are organized into five domains (see [Table 1](#)). These self-defeating cognitive patterns vary in severity and increase risk for developing psychopathology. Factor analytic studies of the Young Schema Questionnaire generally support the original conceptualization (e.g., [9]), although the number and structure of these domains is somewhat inconsistent across studies.

## Status of EMS as a vulnerability factor

Cross-sectional studies indicate that all five EMS domains are positively associated with depressive symptomatology, although findings are most consistent for Impaired Autonomy and Disconnection/Rejection (see [10]). EMS predict depression severity [11,12] and episodes, with follow-up intervals as long as 9 years [13]. Furthermore, there is increasing evidence for transactional relationships between EMS, stress, and depression (e.g., [12]). A recent multiwave study of adolescents found that Disconnection/Rejection and Impaired Autonomy predicted increases in depression and stress over time, which in turn predicted greater endorsement of EMS [14].

Vulnerability factors should predict psychopathology prospectively *and* evince stability over time. EMS demonstrated high temporal stability over a 4-week interval in 8–13 year old children [15] and moderate to high stability over a six-month period in 9–10 year olds [16]. Similar findings have been shown in adult populations (e.g., [9]) and with intervals ranging from 2.5 to 5 years [17] and 9 years [18].

Several studies have investigated whether EMS interact with stress to predict depression (diathesis–stress model)

Table 1

**Early maladaptive schemas****Disconnection and rejection**

*Difficulty forming secure and satisfying relationships with close others and a belief that needs for stability, nurturance, love and belonging will not be met*

- Abandonment/instability
- Mistrust/abuse
- Emotional deprivation
- Defectiveness/shame
- Social isolation/alienation

**Impaired autonomy and performance**

*Low perceived ability to function independently and having a poorly developed sense of identity*

- Dependence/incompetence
- Vulnerability to harm or illness
- Enmeshment/underdeveloped self
- Failure

**Impaired limits**

*Beliefs that one is superior and entitled to special privileges and that one lacks self-discipline and an ability to delay gratification*

- Entitlement/grandiosity
- Insufficient self-control/self-discipline

**Other-directedness**

*Meeting the needs of others before one's own needs in order to gain conditional acceptance*

- Subjugation
- Self-sacrifice
- Approval seeking/recognition-seeking

**Overvigilance and inhibition**

*Sacrificing relationships, relaxation, and happiness in order to meet strict self-imposed standards*

- Negativity/pessimism
- Emotional inhibition
- Unrelenting standards/hypercriticalness
- Punitiveness

Source: Young *et al.* [8].

or function independently of stress (main effect model). In a study of 12–18 year olds, an interaction of EMS and stress was only found in late adolescents who experienced peer (as opposed to parental) rejection [19]. With the exception of a subsample of males who reported high Disconnection/Rejection and Other-Directedness, no significant interactions between EMS and stressors emerged in the prediction of depressive symptoms in a multiwave study of adolescents [11\*\*]. Findings in adult samples follow a similar pattern, with some reporting no evidence of diathesis–stress interactions [20,21] and others reporting moderation only in subsamples or for specific EMS [12,22,23]. Schmidt *et al.* [23] suggest that the schemas of individuals with high EMS are chronically activated by a broad array of environmental events, such that these individuals are always in high distress. This may create a ceiling effect such that life events can exert less of an influence on symptomatology. This interpretation is most consistent with the extant literature, such that EMS largely appear to operate independently of stress levels in predicting depression, consistent with a main effect vulnerability model.

**Factors contributing to EMS**

Several cross-sectional studies have reported significant associations between EMS and parental maltreatment,

particularly emotional maltreatment in childhood (e.g., [24]). Children exposed to emotional maltreatment may internalize the critical and demeaning messages from their abuser(s). Over time, these messages may form core beliefs which predict later psychopathology. Aside from emotional maltreatment [25,26], however, EMS account for the relation between other forms of childhood maltreatment (e.g., poor parenting styles [27], general parental abuse [28], attachment with parents and peers [29]) and depression.

Young *et al.* [8] posited that parents or major caregivers have the greatest influence on schema development; however, as children mature, peers and intimate partners become increasingly important. For example, emotional maltreatment perpetrated by adolescent peers (not parents) made EMS worse, which mediated the prospective relation of peer emotional abuse and depressive symptoms [11\*\*]. Adolescents who experience peer victimization also score higher on the Mistrust EMS [30]. This suggests that by adolescence, peers have a greater influence on EMS change. However, in adulthood romantic relationships may be relatively more influential in shaping EMS. In a sample of women, emotional maltreatment by a romantic partner was positively associated with Disconnection/Rejection and Impaired Autonomy, and these EMS

domains partially accounted for the association between abuse and depression [31].

### Modifiability of EMS

EMS are conceptualized as stable and trait-like vulnerability factors, but emerging evidence suggests that they are modifiable. In depressed samples, supportive evidence exists for cognitive-behavioral therapy [32], psychodynamic therapy [33], interpersonal therapy, antidepressant medication (ADM), and a combination of therapy and ADM [10]. In one study, patients with depression received ADM or a combination of cognitive therapy (CT) and ADM. A reduction in EMS was found in both groups [34<sup>\*\*</sup>]. However, individuals with CT + ADM experienced greater improvement in Impaired Limits, implying that they developed a greater sense of self-efficacy and control.

Cruwys and colleagues [35<sup>\*</sup>] suggest that because schemas develop in response to contingency patterns in childhood, they may be responsive to evidence (e.g., corrective social experiences) that EMS are no longer accurate representations of reality. The authors found that depressed participants in a CBT group and homeless participants in a temporary community residence developed a greater sense of social identification, which resulted in a reduction of social isolation beliefs. In summary, various treatments are capable of modifying EMS and may do so most effectively when they target the specific content of core beliefs.

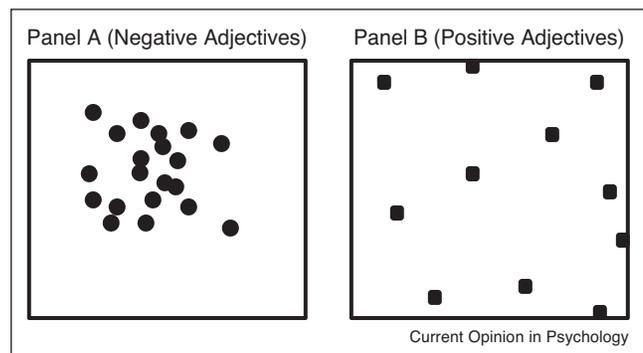
### Cognitive structure

A critical assumption of Beck's theory is that negative content in depression exists within a cognitive structure, such that various self-descriptive traits, beliefs and memories (e.g., 'I'm unlovable, unattractive, undesirable') are represented in a highly organized and clustered manner. The activation of this structure purportedly impacts more surface-level cognitions (see [3]) which exacerbates depressed mood and may contribute to thoughts, behaviors and experiences (e.g., stress generation, excessive reassurance seeking; [36]) that further consolidate the belief system.

A measure of depressive self-schema needs to assess negative content and how that information is organized; however, few studies have explicitly examined the organization or structure of the self-schema (e.g., [37]).

The Psychological Distance Scaling Task (PDST; [38,39]) is one strategy to assess self-schema structure in depression. Respondents place self-referential adjectives in two-dimensional space based on valence and self-descriptiveness. The resultant clustering among adjectives (assessed by measuring the distances among adjectives) is believed to reflect the degree of interconnectedness of self-referential content or schema consolidation (e.g., less distance among

Figure 1



A hypothetical depiction of adjective clustering on the Psychological Distance Scaling Task. Note: Depressed individuals tend to show less distance (or greater interconnectedness) among negative self-referential adjectives (Panel A) and greater distances (less interconnectedness) among positive self-referential words (Panel B). Nondepressed individuals tend to demonstrate the opposite pattern of clustering.

adjectives is indicative of greater interconnectedness, whereas greater distance is suggestive of less interconnectedness or consolidation; see Figure 1).

### Status of cognitive structure as a vulnerability factor

A number of studies have demonstrated that cognitive structure meets sensitivity [39,40,41<sup>\*</sup>,42], specificity [39,41<sup>\*</sup>,43] and stability [38,44] criteria as a vulnerability factor for depression (see [3,45<sup>\*</sup>]). Individuals with clinical depression [39] or increasing severity of dysphoria [40,41<sup>\*</sup>] show well-interconnected negative content and loosely clustered positive content. This finding has also been demonstrated in adolescent samples [41<sup>\*</sup>,46,47] and in individuals with past depression (e.g., [48]). In addition, cognitive organization appears to predict depressive symptoms beyond negative schema content [41<sup>\*</sup>]. The interaction of cognitive organization and negative life events has also been found to predict depression one year later after controlling for initial depressive severity [42]. Research has also demonstrated that the self-schema structures observed in depression differ in some ways from those found in anxiety [39,41<sup>\*</sup>,43]. Moreover, negative cognitive organization for interpersonal content appears to be stable even following symptom remission [38,44].

### Factors contributing to cognitive structure

A dearth of research has assessed predictors of cognitive structure. Lumley and Harkness [47] examined developmental precursors to negative cognitive organization in a sample of university students assessed for depression and childhood maltreatment, and who completed a modified version of the PDST. After controlling for current depressive symptoms, higher self-reported emotional maltreatment and physical abuse were associated with greater interconnectedness for negative content and less consolidation for positive content. In this cross-sectional design,

the authors also found that cognitive structure mediated the relation between early abuse and depression. Specifically, well-organized negative content mediated the relation between parental emotional maltreatment and physical abuse and depression. The lack of interconnected positive content mediated the relation between maternal (not paternal) emotional abuse and depression. These findings suggest that individuals with a history of maltreatment ‘may lack the positive experiences of parental care necessary to lay the foundation for organized positive self-schemas, while at the same time possessing pronounced negative experiences that provide the internal scaffolding for the organization of maladaptive beliefs’ ([47], p. 529).

Lumley *et al.* [41\*] examined youths’ perceptions of parental responsiveness and psychological control in individuals aged 9–14 years. Perceived parenting behaviors significantly predicted cognitive organization, particularly for negative content. Youth who reported experiencing positive parenting behaviors exhibited less tightly interconnected negative organization. Although cross-sectional, these findings suggest that parenting behaviors may be important predictors of children’s organization of self-representation. Conversely, the results may indicate that negative cognitive organization influences one’s perception of received parenting.

#### Modifiability of cognitive structure

Support for the stability of a vulnerability factor does not necessarily mean that it is immutable [6]. Change in deeper structures is, in fact, a primary goal of cognitive behavioral interventions and one that is purported to result in the reduction of relapse relative to other interventions [1,2\*,49].

Dozois *et al.* [50] compared CT + ADM to ADM alone. Depressive symptoms, dysfunctional attitudes and automatic thoughts improved significantly and equally in both groups. Individuals treated with CT + ADM, however, demonstrated significantly greater cognitive organization of positive interpersonal content and less well-connected negative interpersonal content than did individuals treated with ADM alone [50]. These results suggest that CT may offer more in terms of deeper structural change than medication does. However, this change may have had something to do with the combination of interventions rather than CT *per se*. Indeed, subsequent research has yielded discrepant findings (e.g., [34\*\*,51\*\*]).

Quilty *et al.* [51\*\*], for example, reported the results from a study of patients with depression who received cognitive behavioral therapy (CBT) or ADM. Participants completed the PDST, and a battery of other tests, before, during and after therapy. Positive content became more interconnected and negative content less consolidated over treatment, with no significant between-group

differences. These results suggest that enduring cognitive risk factors can be modified with multiple treatment modalities.

#### Future directions for research and practice

Future research is needed to elucidate the mechanisms of change in treatments like CBT and whether a shift in deeper cognitive structures and core beliefs may be a final common pathway regardless of treatment modality. Additional research is also needed to ensure that these findings are robust and to determine which strategies (and doses of psychotherapeutic interventions) produce the most stable cognitive change. Furthermore, it would be interesting to explore whether change in EMS and cognitive structure are important for treatment outcome and for preventing relapse, as well as their relative influence compared to established predictors of recurrence such as cognitive reactivity [49]. Moreover, although childhood maltreatment is associated with EMS and a depressotypic pattern of cognitive organization, prospective longitudinal research is needed to investigate whether a causal relationship exists. The influence and timing of peer and partner-relationships on the development of negative self-structures is another important avenue for future research. These questions would be best addressed by multiwave studies using multitrait–multimethod designs [5\*\*]. Such studies would also be ideally suited to investigate when and how EMS and cognitive organization develop and crystallize over time, and how different levels of cognition and behaviors influence each other transactionally.

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Papers of particular interest, published within the period of review, have been highlighted as:

- of special interest
- of outstanding interest

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This chapter charts the origins, historical developments and course of cognitive theory and therapy. The empirical status of cognitive therapy is reviewed and directions for future research outlined.

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This chapter provides a comprehensive review of cognitive risk and vulnerability factors in psychopathology (with focus on depression,

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This study examined EMS change over 15 weeks in patients with current depression. Patients receiving cognitive therapy and patients receiving cognitive therapy in combination with antidepressant medication both demonstrated improvement in EMS. Those in the cognitive therapy and antidepressant treatment group also evinced greater improvement in Impaired Limits EMS. Cognitive representation was also examined.

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*the 30th International Congress of Psychology.* Edited by Cooper S, Ratele K. *Psychology Serving Humanity: Proceedings of the 30th International Congress of Psychology.* **Western Psychology.** Psychology Press; 2014:166-175.

Research is described showing that negative cognitive structures show sensitivity and specificity to depression and temporal stability. Given that cognitive therapy (CT) is highly effective for treating the acute phase of a depressive episode, and that this treatment also reduces the risk of relapse and recurrence, it is possible that CT may alter this stable vulnerability factor. In the initial trial that examined this question, CT (combined with medication) uniquely shifted negative cognitive organization. A subsequent trial, comparing CT alone to antidepressant medication, however, showed that negative structure improved in both treatments.

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This study examined the temporal dynamics and causal role of cognitive structure and processing in treatment for depression in a sample of 104 patients treated with cognitive behavioural therapy (CBT) or pharmacotherapy. Most cognitive variables showed a similar degree of change across both treatments. Evidence for the mediating role of cognition was limited, and not specific to CBT.