



# Post-traumatic stress symptom, metacognition, emotional schema and emotion regulation: A structural equation model



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## ABSTRACT

**Objective:** The present study aimed to assess the direct and indirect impacts of the metacognition, emotional schema and emotion regulation in prediction of post-traumatic stress (PTS) symptom.

**Method:** Participants consisted of 678 high school students from earthquake-stricken areas of eastern Azerbaijan selected from Varzaghan, Ahar and Heris by multistage cluster sampling. PTSD Symptom Scale—Self Report (PSS-SR), Metacognition Questionnaire—Adolescent Version (MCQ-A), Leahy Emotional Schema Scale (LESS) and Difficulties in Emotion Regulation Scale (DERS) were utilized for data collection. SPSS software and LISREL software were used for data analysis.

**Results:** The results of SEM and path analysis indicated the direct and indirect (through emotion regulation) impacts of metacognition and also indirect (through emotion regulation) impact of emotional schema on PTS symptom. Model examination presented the good fitness of the proposed theoretical model.

**Conclusions:** Consistent with metacognitive model and also emotional schema model, results of this study indicated the impact of metacognition and emotional schema on post-traumatic stress symptom through emotion regulation. This finding emphasizes that both metacognitive and emotional factors are important in explanation of PTS symptom.

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## 1. Introduction

Human life has never been free from the traumatic events and also trauma has never been free from the economic, somatic, social and especially psychological consequences such as PTSD that is a prevalent outcome of traumatic events and includes reexperiencing, avoidance, negative cognitions and mood, and arousal (Association, 2013). There are many models for the explanations of the mechanism of the formation and persistence of the post-traumatic stress disorder (PTSD). On the one hand there are third wave approaches such as metacognitive model (Wells, 2000) and emotional schema model (Leahy, 2002). These approaches are particularly sensitive to the context and functions of psychological phenomena, not just their form, and thus tend to emphasize contextual and experiential change strategies in addition to more direct and didactic ones (Hayes, Follette, & Linehan, 2004). On the other hand, there exist a vast amount of studies that focus on the role of emotion regulation in psychopathology (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Cloitre, Miranda, Stovall-McClough, & Han, 2005; Tull, Barrett, McMillan, & Roemer, 2007). According to the metacognitive model, metacognition refers to cognition applied to cognition and maybe defined as any knowledge or cognitive processes involved in the

appraisal, control, and monitoring of thinking (Wells, 2000). The activation of the Cognitive-Attentional Syndrome (CAS) is the main factor in formation of the PTSD. This syndrome contains the worry, rumination and threat monitoring (Wells, 2009). In line with the appraisal of the metacognitive model of PTSD, path analysis and structural equation model have reported the acceptable fitness of model with data (P. Roussis, 2007). These studies indicated that both worry (P. Roussis & Wells, 2006) and rumination (Bennett & Wells, 2010) which are two components of the CAS, play a mediating role between metacognitive beliefs and post-traumatic stress (PTS) symptom. Another model that explains the emotional disorders, is the emotional schema model (Leahy, 2002). The emotional schema model is a model based on the metacognitive theory (Wells, 2000) that integrates emotional-focused model with a metacognitive model and argues that the metacognitive model stresses disorders of the theory of mind, and the emotional schema model stresses disorders of the theory of emotion and mind. Specific styles of self-reflective thinking and evaluations of one's own thoughts and feelings can lead to problematic appraisals and strategies of emotional regulation. These ideas serve as foundational theory for "emotional schema therapy" (Herbert & Forman, 2011). This is notable that both metacognitive and emotional schema models agree that interpretations and strategies that people use for the manipulation of unpleasant cognitive or emotional phenomenon have an effect on the anxiety disorders (Leahy, 2007). Furthermore, the studies support the relationship between

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problematic emotional schema and the variety of psychopathology such as PTSD (Herbert & Forman, 2011). The third variable in this study is emotion regulation which is related to metacognition and also to emotional schema but hasn't been considered enough. Although emotion regulation deficits have been implicated in a range of clinical disorders (Cloitre, Cohen, & Koenen, 2006), it has been identified as a central feature of PTSD. Deficits in emotion regulation would likely lead to greater appraisals of threat, diminished coping resources, and more intense emotional responding upon exposure to a traumatic stressor, and thus, these deficits may function in the etiology of PTSD (Bardeen, Kumpula, & Orcutt, 2013). Deficits in emotion regulation likely contribute to the maintenance of PTSD in multiple ways. Individuals may perceive their emotions as uncontrollable (Frewen & Lanius, 2006) and subsequently learn to fear internal and external cues that elicit emotional reactions. A lack of access to adaptive emotion regulation strategies may then lead to avoidance of trauma-related experiences, thus preventing exposure to trauma relevant reminders that would otherwise facilitate habituation (Foa & Kozak, 1986). In metacognitive model, emotion regulation is one of the CAS components that metacognitive beliefs lead to disorder through it. Also emotional schema therapy tries to change the dysfunctional strategies of emotion regulation through identification and modification of emotional schema (Leahy, Tirsch, & Napolitano, 2011). Totally metacognitive model of PTSD is accepted as a model with good fitness, however studies have restricted to worry and rumination and emotion regulation (as a component of CAS) is neglected. Also, despite a growing body of literature indicating a link between emotion regulation deficits and PTSD symptomatology (Ehring & Quack, 2010; Tull et al., 2007) the precise nature of the relationships among emotion dysregulation and PTSD is unclear (Bardeen et al., 2013). As noted by Manser, Cooper, and Trefusis (2012), the role of emotion in metacognitive theory has been relatively neglected as an area for research and discussion in both the academic and clinical literature. According to the above, we considered the metacognitive model of PTSD as a base model and entered two variables (emotional schema and emotion regulation) into this model to clarify the role of emotion in metacognitive model of PTSD. We hypothesized that a) metacognition has direct and indirect impacts (through emotion regulation) on the PTS symptom, b) emotional schema has direct and indirect impacts (through emotion regulation) on the PTS symptom, and c) emotion regulation has a direct impact on the PTS symptom. The primary aim of the current study was to examine this theoretical model and clear the role of emotion regulation in metacognitive model of PTSD.

## 2. Method

### 2.1. Participants and procedure

Participants included 678 high school students (311 male and 367 female) from earthquake-stricken areas of eastern Azerbaijan (three cities named Varzaghan, Heris and Ahar) who had experienced an earthquake in the summer of 2012. These students were selected by cluster sampling in the autumn of 2013. Two high school classes were selected randomly from any cities and one class selected from any grade. In general, the number of students in Varzaghan, Heris and Ahar was 195, 215 and 268 respectively. Age of participants ranges from 14 to 18 and the mean was 15/81. The selected students completed the questionnaire package including PTSD Symptom Scale—Self Report (PSS-SR), Metacognitions Questionnaire—Adolescent Version (MCQ-A) and Difficulties in Emotion Regulation Scale (DERS).

### 2.2. Measures

PTSD Symptom Scale—Self Report (PSS-SR, Foa, Riggs, Dancu, & Rothbaum, 1993): PSS-SR is a 17 item self-report measure designed to diagnose PTSD according to DSM and also assess the severity of PTSD symptoms (Foa et al., 1993). This scale contains three groups of items including: Re-experiencing, Avoidance, and Increased Arousal. The

reliability and validity of the PSS-SR Farsi translated version were demonstrated by Mirzamani, Mohammadi, and Besharat (2006) in adolescent exposed to disaster. They showed an alpha coefficient of 0.84 for the PSS-SR total score. Correlation coefficients between the PSS-SR and the psychiatric interviews were significant ( $r = .62, P < .001$ ). In the current study alpha coefficient acquired was 0.91 for total score of PSS-SR.

Metacognitions Questionnaire—Adolescent Version (MCQ-A, Cartwright-Hatton et al., 2004): MCQ-A is a 30 item self-report scale designed to measure metacognitive beliefs in adolescents. It was developed from the Metacognitions Questionnaire-30 (Wells & Cartwright-Hatton, 2004) and contains five subscales: a) Positive beliefs, b) Uncontrollability and danger, c) Cognitive confidence, d) SPR, and e) Cognitive self-consciousness (Cartwright-Hatton et al., 2004). Moreover, Khoramdel, Sajjadi, Bahrami, and Zanganeh (2012) showed that the MCQ-A Farsi translated version had proper reliability and validity. Alpha coefficient was 0.79 for total scale and ranges from 0.70 to 0.75 for subscales. In the current study alpha coefficient acquired was 0.84 for total score of MCQ-A.

Leahy Emotional Schema Scale (LESS, Leahy, 2002): LESS is a 50 item self-report scale that consisted of fourteen subscales. These subscales assess fourteen dimensions of emotional schema. Farsi Version of LESS factor analysis has shown thirteen subscales: a) Rumination, b) Emotional self-awareness, c) Guilt, d) Expression of feeling, Controllability, e) Validation by others, f) Comprehensibility, g) Blame, h) Demands for rationality, i) Simplistic view of emotions, j) Higher values, k) Acceptance of feelings, and l) Consensus. Reliability of the Farsi translated version of LESS has been reported as .78 for total scale and between .56 and .71 for subscale (Khanzadeh, Edrisi, Mohammadkhani, & Saidian, 2013). Also construct validity has been confirmed in their study. In the current study alpha coefficient acquired was .58 for total score of LESS.

Difficulties in Emotion Regulation Scale (DERS, Gratz & Roemer, 2004): DERS is a 36 item scale that includes six subscales: a) Nonacceptance of Negative Emotional Responses, b) Difficulties Engaging in Goal-Directed Behavior When Distressed, c) Difficulties Controlling Impulsive Behaviors when distressed, d) Lack of Emotional Awareness, e) Limited Access to Effective ER Strategies, and f) Lack of Emotional Clarity (Gratz & Roemer, 2004). In general, results support the reliability and validity of the DERS as a measure of emotion dysregulation in adolescents (Weinberg & Klonsky, 2009). The reliability and validity of the DERS Farsi translated version were demonstrated by Askari, Pasha, and Aminian (2009). They showed the alpha coefficient at .86 for the DERS total score. Also convergence validity of Farsi Version has been confirmed in their study. In the current study alpha coefficient acquired was .87 for total score of DERS.

### 2.3. Data analysis

The first set of analyses examined the measurement model for the latent variables. Metacognition measured by 5 subscales of MCQ-A. Emotional schema was measured by thirteen subscales of LESS. Emotion regulation was measured by six subscales of DERS and PTS symptom was measured by total score of PSS-SR. To test if the hypothesized model in the current study was concordant with the collected data, Fitness model indexes were employed. In order to examine the direct and indirect impacts of metacognition and emotional schema as independent variables on the emotion regulation as a mediator variable and also on the PTS symptom as a dependent variable in hypothesized model, path analysis and structural equation modeling (SEM) analysis were employed. This analysis has been done using LISREL (Version 8.5).

## 3. Results

Descriptive statistics (mean, standard deviation) and correlation among variables are presented in Table 1. The mean of the PTS symptom

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