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Emotion regulation difficulties and psychopathology among Pakistani adolescents

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Abstract

The main aim of this study was to examine the associations between emotion dysregulation and psychopathology in adolescence. A representative sample of 1,500 adolescent students (50% female) aged 12 to 19 years ($M = 15.08$, $SD = 1.44$) was recruited from schools and colleges located in the province of district Punjab, Pakistan, using a stratified sampling technique. Structural equation modeling (SEM) was used to test associations between five dimensions of emotion regulation difficulties and five forms of psychopathology by gender (male/female). The model provided an adequate fit to the data among girls and boys. In the model tested among boys, seven positive associations between emotion regulation difficulties and psychopathology variables were found. The model tested with girls included one negative and 13 positive associations between the study variables. Findings can be used for designing universal prevention programs to prevent the development of psychopathology.

Keywords

Emotion regulation difficulties, psychopathology, Pakistani adolescents, gender differences, structural equation modeling

Adolescence is a difficult stage of development, marked by an overwhelming emotional reactivity, impulsive behavior, and increased risk-taking (Kemp et al., 2019; Steinberg, 2005, 2008), coupled with neurobiological development of circuitries implicated in emotion regulation processes (Ahmed et al., 2015). Adolescents are required to negotiate the developmental milestones, such as emotion understanding and knowledge of socio-cultural norms, in a healthy way as these developmental acquisitions are imperative for the adaptive progression of adolescents' development (Cole, 2014; Spinrad et al., 2006). Deficits in emotion regulation threaten individuals' psychological functioning and make them susceptible to negative sequelae (Gross & Jazaieri, 2014).

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Emotion regulation

Emotion regulation is a multifaceted, affective phenomenon, defined as “a series of processes, intrinsic and extrinsic, responsible for monitoring, evaluating, and modifying emotional reactions, especially in its temporal elements and intensity for achieving personal goals” (Thompson, 1994, pp. 27–28). It is a dynamic process that ingrains experience with meaning and entails the synchronization of physiological, cognitive, and behavioral components to express emotions (Waters & Thompson, 2014). Gratz and Roemer (2004) proposed a clinically derived model of emotion regulation, characterized by distinct processes involving: (a) the awareness, clarity, and acceptance of emotions, (b) ability to refrain from impulsive behaviors and involve in goal-directed behaviors when confronted with negative emotions, (c) the use of adaptive strategies to regulate the intensity and temporal characteristics of emotional responses, and (d) agreeability to experience negative emotions in pursuit of meaningful activities. Deficits in any one of these processes are the sine qua non of psychopathology.

Emotion regulation as conceptualized by Gratz and Roemer can be assessed using the six dimensional, 36-item Difficulties in Emotion regulation Scale (DERS; Gratz & Roemer, 2004) or its brief, five dimensional, 16-item version – the DERS-16 (Bjureberg et al., 2016; Gratz & Roemer, 2004). Both versions of DERS have been demonstrated to be parsimonious and reliable measures of emotion dysregulation (Bjureberg et al., 2016; Gratz & Roemer, 2004; Skutch et al., 2019). Recent studies assessing psychometric properties of both measures demonstrated that the DERS-16 slightly outperformed the full version of the scale (Hallion et al., 2018; Miguel et al., 2017).

Emotion dysregulation and psychopathology

Emotion dysregulation is a trans-diagnostic risk factor of psychopathology (Alink et al., 2009; Casey, 1996; Cicchetti et al., 1995; Gross & Jazaieri, 2014; Sheppes et al., 2015; Shipman et al., 2000), implicated in a range of psychological problems, such as depression (Casey, 1996; Garber et al., 1991; Werner-Seidler et al., 2013), anxiety (Southam-Gerow & Kendall, 2002), aggression (Donahue et al., 2014), anger (Beauchaine & Thayer, 2015), borderline personality disorder (Chapman, 2019; Salsman & Linehan, 2012), and sleep problems (Gruber et al., 2008). Numerous studies have documented that difficulties in emotion regulation in children and adolescents manifest in the form of internalizing and externalizing problems, such as anxiety, depression, aggression, and suicidal ideation (e.g. Bender et al., 2012; Cole et al., 2009; Kliewer et al., 2004; Neumann et al., 2011; Pisani et al., 2013; Silk et al., 2003). Research has also revealed that deficits in two aspects of emotion dysregulation, lack of emotional clarity and non-acceptance of emotions, lead to social anxiety disorder (Mathews et al., 2014). Generalized anxiety disorder in adolescents, in turn, has been associated with lowered emotional awareness (Roemer et al., 2009), lack of emotional clarity (Mennin et al., 2005; Salters-Pedneault et al., 2006), non-acceptance of emotions (Mennin et al., 2009), and difficulties engaging in goal-directed behavior (Salters-Pedneault et al., 2006). It was also reported that adolescents with borderline personality features have elevated scores on overall DERS, and especially high scores on impulse control difficulties and limited access to effective emotion regulation strategies DERS facets (Ibraheim et al., 2017). Finally, prior research suggested that emotion dysregulation and sleep disturbances are reciprocally related (Harvey et al., 2011).

Past research indicated that both the development of psychopathology and emotion dysregulation may differ for the two genders. More specifically, girls tend exhibit more internalizing symptoms, while boys exhibit more externalizing symptoms (Fanti & Henrich, 2010; Hankin et al., 1998; Keegstra et al., 2010; Leadbeater et al., 1999). Internalizing symptoms may be manifested in the form of excessive worry, sadness, withdrawal, fear, and insecurity. Externalizing

symptoms may involve impulsive behavior, verbal and physical aggression, and agitation (Benarous et al., 2015). Similarly, research exploring gender-specific emotional expression patterns with participants from Western societies documented that males demonstrated more powerful emotions, such as anger, whereas females demonstrated more powerless emotions, such as sadness and fear (Fischer et al., 2004). Research has also found greater emotion regulation difficulties in girls compared with boys (Bender et al., 2012). Two studies using the DERS to assess emotion dysregulation reported girls to have less access to effective emotion regulation strategies and less emotional clarity than boys (Bender et al., 2012; Weinberg & Klonsky, 2009). It remains unclear why these gender differences exist, but some research evidence exists showing gender differences in the neurological processes involved in the regulation of emotions (McRae et al., 2008). In addition, gender discrimination can increase the risk for negative emotionality among young girls and make them more vulnerable to negative health outcomes than boys (UN Department of Economic and Social Affairs, 2003). Hence, it is important to consider gender differences in socialization while examining variables related to emotion regulation and psychopathology (Baltes & Silverberg, 1994).

Despite a plethora of research examining the effects of deficits in emotion regulation in adolescents' development of psychopathology (e.g. Chapman, 2019; Mathews et al., 2014), most available studies typically employed traditional statistical techniques, which preclude the inclusion of different dimensions of emotion dysregulation and psychopathology in one model. This is a serious drawback because different forms of psychopathology, although treated as separate diagnoses, are highly inter-correlated (Clark et al., 2017). A notable exception to this is the study by McLaughlin et al. (2011), which examined the associations between emotion dysregulation and symptoms of psychopathology using structural equation modeling (SEM). In this study, the researchers explored the link between emotion regulation deficits and four aspects of psychopathology (depression, anxiety, aggressive behavior, and eating pathology) among a large sample of U.S. adolescents. Findings indicated that emotion dysregulation predicts increases in anxiety, aggressive behavior, and eating pathology scores. However, although emotion regulation is a multidimensional construct and its different facets were previously shown to associate differently with psychopathology criteria, it was included as a unitary latent variable in the model.

Other methodological shortcomings of prior research pertain to the use of samples overwhelmingly drawn from Western, Educated, Industrialized, Rich, and Democratic (WEIRD) societies, without considering substantial variability across populations. Nielsen et al. (2017) have noted that using WEIRD samples is a very serious limitation in understanding developmental processes in general. Pertinent to the focus of the current investigation, it has been demonstrated that although adolescence is a universal life stage, it can take distinctive forms in different societies (Dasen, 2000). Indeed, in Pakistan, the socio-cultural system is led by collectivism and there is a considerable gender disparity among Pakistani adolescents (Abbasi et al., 2015; Ali et al., 2011; Kağitçibaşı, 1996; Saleem et al., 2017). In addition, parents tend to cultivate conformity in their children, while exerting high psychological control in socializing them, which affects their emotional development (Barber, 1996; Shahid, 2007; Triandis, 2001). Therefore, findings from emotion dysregulation research with WEIRD samples may lack generalizability to non-WEIRD populations, settings, and contexts, including contemporary Pakistani adolescents.

Some studies conducted with Pakistani adolescents offer insight into the processes of emotion regulation in this specific population, including parenting styles as predictors of emotion regulation as well as the link between emotion regulation and psychopathic tendencies (Jabeen et al., 2013; Walayat & Butt, 2017). A study by Khalid (2015) assessed emotion regulation as a mediator in the relationship between attachment/parental bonding and mental health variables using SEM modeling. However, the full model tested was overspecified and the mediation analysis was

conducted with cross-sectional data, which could not reveal any information about the longitudinal mediation process and could substantially bias the estimates. To the best of our knowledge, no study with Pakistani adolescents to date explored the direct relationship between emotion regulation processes and various forms of psychopathology, and incorporated all variables of interest in a single model.

The current study

Adolescence is a critical turning point between childhood and adulthood, when the burden of mental disorder may still be prevented (Nobile et al., 2013). Prior research has indicated that a salient risk factor in the development of psychopathology is emotion dysregulation. However, in order to design bespoke interventions which would effectively address emotion regulation deficits and promote healthy development into adulthood, more empirical research with diverse samples of adolescents, especially those drawn from non-WEIRD populations, is warranted. In addition, to address limitations of prior research, future studies in the area should account for the multidimensional nature of emotion regulation construct as well as the co-variation between different types of psychopathology. The current study aimed to address these research gaps by testing the relationships between five dimensions of emotion dysregulation (lack of emotional clarity, difficulties engaging in goal-directed behavior, impulse control difficulties, limited access to effective emotion-regulation strategies, and non-acceptance of emotional responses) and five forms of psychopathology (anxiety, depression, anger, borderline personality features, and sleep disturbance), while controlling for age, in a single structural model. Considering gender differences in emotion regulation and psychopathology (e.g. Bender et al., 2012; Fanti & Henrich, 2010; Hankin et al., 1998; Keegstra et al., 2010; Leadbeater et al., 1999; Weinberg & Klonsky, 2009) as well as the fact that Pakistani girls and boys are subject to different child-rearing practices (Ali et al., 2011), we conducted SEM to find similarities and differences in how emotion dysregulation dimensions associate with psychopathology variables in the two genders. We predicted that increased emotion dysregulation scores in all areas would associate with higher psychopathology. Based on prior research, we also predicted that we would find gender differences in the relation between emotion dysregulation and psychopathology, but no specific predictions as to which associations would differ were made.

Method

Participants

Adolescent students ($N = 1500$; 50% female) aged 12 to 19 years ($M = 15.08$, $SD = 1.44$, Median = 15) were recruited from schools located in the province of district Punjab, Pakistan. A total of 502 students (33.5%) were recruited from English speaking medium private schools that represent high socio-economic status (SES), 497 students (33.1%) were from federal government institutions representing medium SES, and 501 students (33.4%) were from Punjab government Urdu medium educational institutions that represent low SES. At the caregiver level, 1246 (83.1%) reported living with both parents, 108 (7.2%) with mother only, 25 (1.7%) with father only, 10 (0.7%) with mother and her partner, 14 (0.9%) with father and his partner, 11 (0.7%) with other relatives, 39 (2.6%) with a guardian, 4 (0.3%) with siblings, 39 (2.6%) reported living away from their families, and 2 (0.1%) reported living on their own. Participants reported having between 1 and 12 siblings ($M = 4.51$, $SD = 1.74$, Median = 4). At the community level, 749 (49.9%) of the participants resided in the urban areas of the district. Due to significant missing data, 1476

participants were included in the final analysis. 34 participants were removed from analysis due to non-random missing data (Little's Missing Completely at Random Test: Chi-Square = 8683.01, $df = 6022$, $p < .001$).

Measures

Anxiety was assessed using the 13-item Patient-Reported Outcomes Measurement Information System (PROMIS) Anxiety Short Form measure (PROMIS Health Organization and PROMIS Cooperative Group, 2012b). The measure was developed for children ages 8–17 years and tested with children ages 11–17 in the DSM-5 Field Trials. Respondents were asked to indicate how often they have thought certain thoughts or felt certain feelings in the past seven days. The items were scored on a 5-point scale, ranging from 1 (*never* = symptom not present) to 5 (*almost always* = symptoms strongly present). Sample items include: "I felt like something awful might happen"; "I worried about what could happen to me"; "It was hard for me to relax." The total scores range from 13 to 65, with higher scores indicating more symptoms of anxiety. Cronbach's alpha for the present sample was 0.860. Composite reliability was 0.857.

Depression was assessed using the 14-item Patient-Reported Outcomes Measurement Information System (PROMIS) Depression Short Form measure (PROMIS Health Organization and PROMIS Cooperative Group, 2012c). The measure was developed for children ages 8–17 years and tested with children ages 11–17 in the DSM-5 Field Trials. Respondents were asked to indicate how often they have thought certain thoughts or felt certain feelings in the past seven days. The items were scored on a 5-point Likert scale, ranging from 1 (*never* = symptom not present) to 5 (*almost always* = symptoms strongly present). Sample items include: "I could not stop feeling sad"; "I felt lonely"; "I felt too sad to eat." The total scores range from 14 to 70, with higher scores indicating more symptoms of depression. Cronbach's alpha for the current sample was 0.897. Composite reliability was 0.901.

Anger was assessed using the 6-item Patient-Reported Outcomes Measurement Information System (PROMIS) Calibrated Anger Measure (PROMIS Health Organization and PROMIS Cooperative Group, 2012a). The measure was developed for children ages 8–17 years. Respondents were asked to indicate how well the statements describe their behavior and feelings in the past seven days. Responses were indexed on a 3-point Likert scale (1 = *not at all*, 2 = *moderately*, 3 = *extremely*). Sample items include: "I felt mad"; "I was so angry I felt like yelling at somebody"; "I felt upset." The total scores range from 6 to 18, with higher scores indicating increased anger levels. Cronbach's alpha for the current sample was 0.765. Composite reliability was 0.773.

Sleep disturbance was assessed using a shortened version of the Patient-Reported Outcomes Measurement Information System (PROMIS) Sleep Disturbance Short form measure developed for children ages 11–17 years (PROMIS Health Organization and PROMIS Cooperative Group, 2012d). Of the eight scale items, three items were administered in the current study. Two items ("My sleep was restless" and "I had difficulty falling asleep") were rated on a 5-point Likert scale ranging from 1 = *not at all* to 5 = *very much*. One item ("My sleep was. . .") was rated using a 5-point Likert scale ranging from 1 = *very good* to 5 = *very poor*. Scores range from 3 to 15, with higher scores indicating increased sleep disturbance. A Cronbach's alpha of 0.662 was found for the present sample. Composite reliability was 0.711.

Borderline personality features were assessed using the Borderline Personality Features for Children–11-item scale (BPFSC-11) (Sharp et al., 2014), which is a shortened version of the BPFSC (Crick et al., 2005). The scale measures borderline personality features among children older than 9 years and adolescents. The items of the scale reflect respondents' feelings about themselves and their relationships with other people. Sample items include: "I want to let some people

know how much they've hurt me"; "When I'm mad, I can't control what I do"; "People who were close to me have let me down". Responses are indexed on a 5-point Likert scale, ranging from 1 = *not true at all* to 5 = *always true*. Scores range from 11 to 55, with higher scores indicating more borderline personality features. A Cronbach's alpha of 0.867 was found for the present sample. Composite reliability was 0.869.

Emotion regulation difficulties were measured using the Difficulties in Emotion Regulation Scale (Brief Version) (DERS-16; Bjureberg et al., 2016). The DERS-16 is a psychometrically-sound self-administered scale that consists of 16 items indexed on a 5-point Likert scale (1 = *almost never*, 2 = *sometimes*, 3 = *half of the time*, 4 = *most of the time*, 5 = *almost always*). The scale consists of five subscales: lack of emotional clarity (two items; sample item: "I have difficulty making sense out of my feelings"; Cronbach's alpha = 0.729; composite reliability = 0.732), difficulties engaging in goal-directed behavior (three items; sample item: "When I am upset, I have difficulty getting work done"; Cronbach's alpha = 0.762; composite reliability = 0.767), impulse control difficulties (three items; sample item: "When I am upset, I become out of control"; Cronbach's alpha = 0.842; composite reliability = 0.842), limited access to effective emotion regulation strategies (five items; sample item: "When I am upset, I believe I will remain that way for a long time"; Cronbach's alpha = 0.790; composite reliability = 0.789), and non-acceptance of emotional responses (three items; sample item: "When I am upset, I feel ashamed with myself or feeling that way"; Cronbach's alpha = 0.663; composite reliability = 0.664). Scores range from 2 to 10 for lack of emotional clarity subscale, from 3 to 15 for difficulties engaging in goal-directed behavior, impulse control difficulties, and non-acceptance of emotional responses subscales, and from 5 to 25 for limited access to effective emotion regulation strategies subscale. Higher scores on each subscale indicate more emotion regulation difficulties.

All questionnaires used in the current study were translated from English to Urdu by the first author. To ensure that the meaning of the original inventories has been retained, the Urdu versions were translated back to English by professional translators. Any discrepancies in translation were resolved with the help of experts.

Procedure

Ethical approval for the study was granted by the University of Sheffield, Psychology Department ethical review board. An official permission for data collection was also obtained from the Punjab Education Department, followed by permission from respective heads of educational institutions. Participants were recruited from schools and colleges based across the Punjab district, Pakistan. The sampling plan for the current study followed a stratified design. Specifically, the sample was stratified by residential area (urban vs. rural), socio-economic status of the school/college (low, medium, and high), and, since most educational institutions after the primary level (fifth grade) in Pakistan are separate for males and females, gender (male vs. female schools/colleges). As an initial step, a list of all registered public and private educational institutions from the district of Punjab was secured. Thirty-six schools and 36 colleges were then randomly selected based on the stratification criteria, giving a total of 72 participating institutions. Students from grades 7 to 12 were then randomly chosen from the participating educational institutions, with an average number of 21 students from one class/group (see Figure 1 for more details on participating institutions). All participating students had a parental consent to take part in the study and also provided informed consent themselves. Students were asked to complete anonymous, paper and pencil questionnaires which were compiled into a booklet along with an instruction sheet and a consent form attached to the front of the booklet. Each participant was provided with a brief description of the study, how to complete the questionnaire, and the general expected completion time. All data collection took part

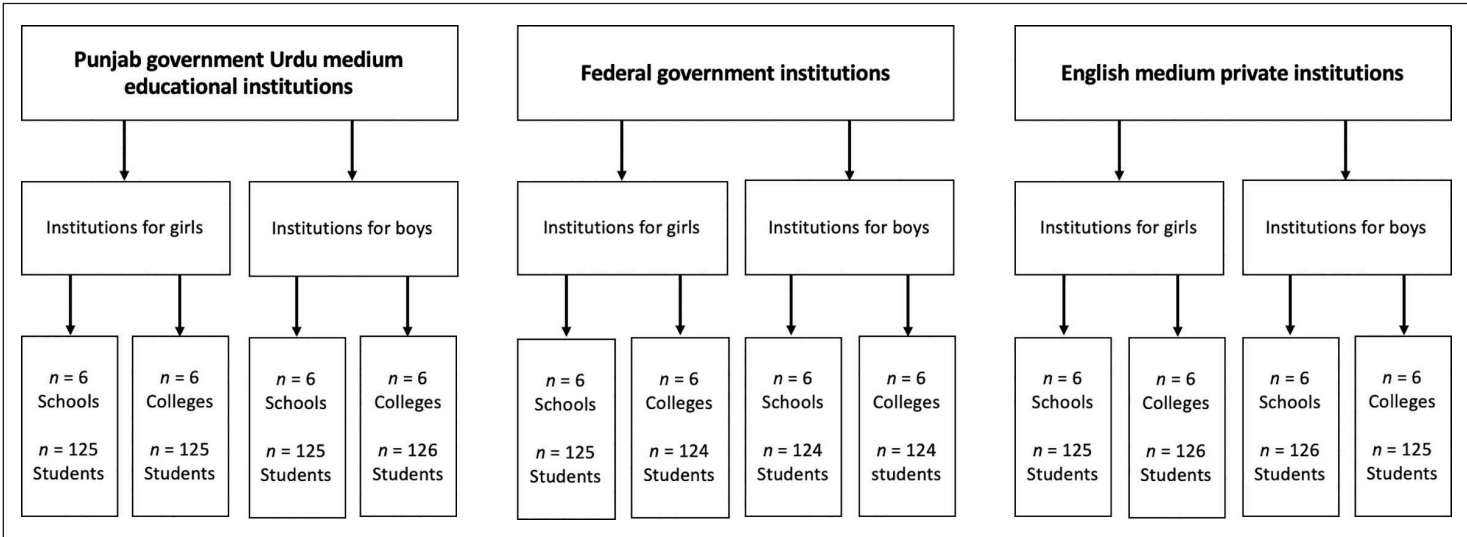


Figure 1. Types and number of educational institutions and number of students from each type of institution participating in the study.

in classroom settings, with a researcher present during the process. Participants were assured about the confidentiality of their participation and informed that they could withdraw from the study at any time. Participation was voluntary without any form of reward. Participants were debriefed upon completion of the questionnaire. They were also informed of appropriate school services and a licensed referral psychological/counseling clinic where they could be provided with assistance should they experience any emotional discomfort because of their participation in the study.

Statistical analysis

SPSS version 25 was used to generate descriptive statistics, frequencies, scale reliability coefficients (Cronbach's alpha), and gender differences. First, population means, *SDs*, and independent samples *t*-test for continuous variables and proportions for categorical variables (e.g. gender, living arrangements) were calculated to describe the full sample. Next, the structural model of emotion regulation difficulties and psychopathology in adolescence was specified and tested in *Mplus* version 7.4 (Muthén & Muthén, 1998–2015), using robust maximum likelihood estimation (separately for boys and girls). SEM is a method for testing theoretical constructs through analyzing multivariate data. It is a combination of path analysis, which tests associations among observed variables which are displayed in a path diagram, and factor analysis, which combines related observed variables into latent factors (Cohen & Cohen, 1983). The benefit of SEM is that it allows theory testing by verifying associations between both observed and latent variables. In the current study, we identified five latent factors representing distinct emotion regulation processes (lack of emotional clarity, difficulties engaging in goal-directed behavior, impulse control difficulties, limited access to effective emotion regulation strategies, and non-acceptance of emotional responses) and five latent factors representing adolescent psychopathology (anxiety, depression, anger, BPF, and sleep disturbance). Observed covariates included in the model are gender (0 = male, 1 = female) and age.

The following statistics were used to assess model fit: chi-square (χ^2), Root Mean-Square Residual (RMSR), Root-Mean-Square Error of Approximation (RMSEA; Steiger, 1990) with 90% confidence interval (90% CI), and the Comparative Fit Index (CFI; Bentler, 1990). A non-significant chi-square (Kline, 2005) and values above 0.95 for the CFI are considered to reflect a good model fit (Hu & Bentler 1999; Vandenberg & Lance, 2000). CFI values equal or above 0.90 indicate adequate fit (Bentler, 1990; Hu & Bentler, 1999). RMSEA and RMSR values less than 0.05 suggest good fit and values of up to 0.08 indicate reasonable errors of approximation in the population (Browne & Cudeck, 1989).

Results

Descriptive statistics and t-test results

Descriptive statistics, including means, standard deviations for the entire sample and boys and girls for lack of emotional clarity, difficulties engaging in goal-directed behavior, impulse control difficulties, limited access to effective emotion regulation strategies, non-acceptance of emotional responses, anxiety, depression, anger, borderline personality features (BPF), and sleep disturbance are presented in Table 1.

In order to test for gender differences in emotion dysregulation and psychopathology scores, independent samples *t*-tests were performed. The results showed that girls, compared with boys, reported significantly less emotional clarity and greater impulse control difficulties. Boys, in turn, reported less access to effective emotion regulation strategies and greater non-acceptance of emotional

Table 1. Means, standard deviations, and gender differences for emotion regulation difficulties dimensions and psychopathology variables.

Variable	<i>M</i>	<i>SD</i>	<i>t</i> -value	Cohen's <i>d</i>
Clarity	3.43	1.77	-2.33*	.12
Male	3.32	1.65		
Female	3.54	1.87		
Goals	5.70	2.85	-.65	
Male	5.65	2.76		
Female	5.74	2.94		
Impulse	5.40	3.07	2.05*	.10
Male	5.56	3.08		
Female	5.24	3.06		
Strategies	8.21	3.93	2.20*	.11
Male	8.43	3.94		
Female	7.98	3.91		
Non-acceptance	4.73	2.32	2.21*	.11
Male	4.86	2.42		
Female	4.61	2.22		
Anxiety	22.12	8.39	.34	-
Male	20.65	10.50		
Female	20.47	10.76		
Depression	21.85	9.40	-1.37	
Male	19.94	11.35		
Female	20.75	11.29		
Anger	7.71	2.19	-2.72**	.14
Male	7.19	3.28		
Female	7.63	2.91		
BPF	16.77	7.27	-1.89	
Male	15.48	8.80		
Female	16.31	8.25		
Sleep disturbance	5.43	2.59	.33	
Male	5.29	3.22		
Female	5.24	2.75		

Note. BPF = borderline personality features; Clarity = lack of emotional clarity; Goals = difficulties engaging in goal-directed behavior; Impulse = impulse control difficulties; Non-acceptance = non-acceptance of emotional responses; Strategies = limited access to effective emotion regulation strategies. Cohen's *d* = effect size for statistically significant results (*d* = .2 be considered a "small" effect size, .5 represents a "medium" effect size and .8 a "large" effect size).

**p* < .05, ** *p* < .01.

responses than girls. There were no statistically significant gender differences in difficulties engaging in goal-directed behavior. As for gender differences in psychopathology, girls had significantly higher anger scores than boys (see Table 1).

SEM testing

We estimated a SEM model of emotion regulation difficulties and psychopathology in adolescence using five latent factors representing emotion regulation difficulties, age, and gender as exogenous variables and five latent factors representing adolescent psychopathology as endogenous variables.

Table 2. Minimum, maximum, and average standardized factor loadings for emotion regulation difficulties and psychopathology factors for the full sample.

Variable	Min factor loading	Max factor loading	Average factor loading
Clarity	0.75	0.77	0.76
Goals	0.69	0.75	0.72
Impulse	0.79	0.82	0.80
Strategies	0.58	0.72	0.65
Non-acceptance	0.61	0.66	0.63
Anxiety	0.34	0.70	0.56
Depression	0.37	0.75	0.63
Anger	0.45	0.70	0.60
BPF	0.55	0.69	0.61
Sleep disturbance	0.40	0.81	0.66

Note. BPF = borderline personality features; Clarity = lack of emotional clarity; Goals = difficulties engaging in goal-directed behavior; Impulse = impulse control difficulties; Non-acceptance = non-acceptance of emotional responses; Strategies = limited access to effective emotion regulation strategies.

Prior research, theoretical considerations, as well as significant differences in emotion dysregulation scores across the two genders in the current sample provided justification for testing the proposed SEM model using multi-group analysis.

First, the model was tested with the entire sample. Table 2 presents minimum, maximum, and average standardized factor loadings for the 10 latent variables included in the model. The average factor loading scores for all latent factors ranged from 0.56 to 0.80. Although anxiety and depression recorded observed indicators with loading sizes below 0.40 (0.34 and 0.37, respectively), their average factor loadings were within the acceptable range (0.56 and 0.63, respectively). The proposed model demonstrated an adequate fit to the data ($\chi^2 [1961] = 5383.88, p < .001, CFI = 0.89, RMSEA = 0.034 [90\% CI = 0.033/0.035], SRMR = 0.040$). Overall, the model explained 43% of variance in anxiety, 58% in depression, 64% in anger, 38% in sleep disturbance, and 68% in BPF.

Multi-group analysis showed factorial and structural variance with regards to gender, thus further analysis was conducted separately for boys and girls. The SEM model for boys demonstrated an adequate model fit to the data ($\chi^2 [1903] = 3890.14, p < .001, CFI = 0.85, RMSEA = 0.038 [90\% CI = 0.036/0.039], SRMR = 0.046$). Overall, the model explained 44% of variance in anxiety, 49% in depression, 55% in anger, 66% in BPF, and 42% in sleep disturbance. The model with statistically significant standardized path coefficients is presented in Figure 2. Seven of the 30 tested direct paths were statistically significant. As can be seen, lack of emotional clarity was significantly associated with anxiety ($\beta = 0.70, p < .05$) and anger ($\beta = 0.54, p < .05$). Non-acceptance of emotional responses formed significant associations with all variables representing psychopathology: anxiety ($\beta = 0.61, p < .05$), depression ($\beta = 0.86, p < .001$), anger ($\beta = 0.52, p < .05$), BPF ($\beta = 0.72, p < .05$), and sleep disturbance ($\beta = 0.82, p < .001$). The remaining paths included in the model were statistically non-significant.

Among girls, the SEM model also demonstrated an adequate model fit to the data ($\chi^2 [1903] = 3945.94, p < .001, CFI = 0.87, RMSEA = 0.038 [90\% CI = 0.036/0.040], SRMR = 0.050$). Overall, the model explained 48% of variance in anxiety, 66% in depression, 71% in anger, 71% in BPF, and 40% in sleep disturbance. The model with statistically significant standardized path coefficients is presented in Figure 3. Fourteen of the 30 tested direct paths were statistically significant. Lack of emotional clarity was significantly associated with anger ($\beta = 0.30, p < .05$). Difficulties engaging in goal-directed behavior formed one negative association with anger ($\beta = -0.46,$

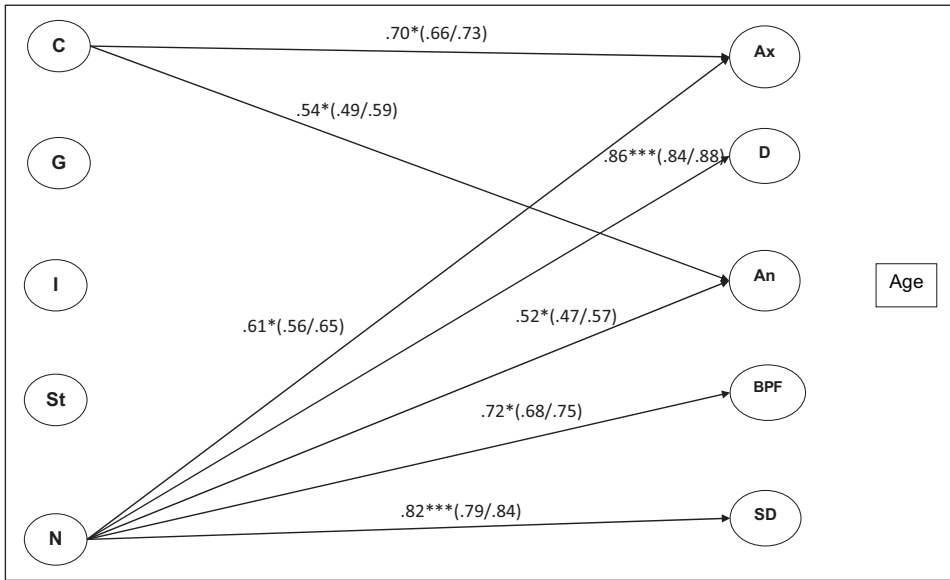


Figure 2. The structural model of emotion regulation difficulties and psychopathology in adolescence with statistically significant standardized path coefficients (Male sample).

Note. An = anger; Ax = anxiety; BPF = borderline personality features; C = lack of emotional clarity; D = depression; G = difficulties engaging in goal-directed behavior; I = impulse control difficulties; N = non-acceptance of emotional responses; SD = sleep disturbance; St = limited access to effective emotion regulation strategies. 95% confidence interval provided in brackets.

* $p < .05$, ** $p < .01$, *** $p < .001$

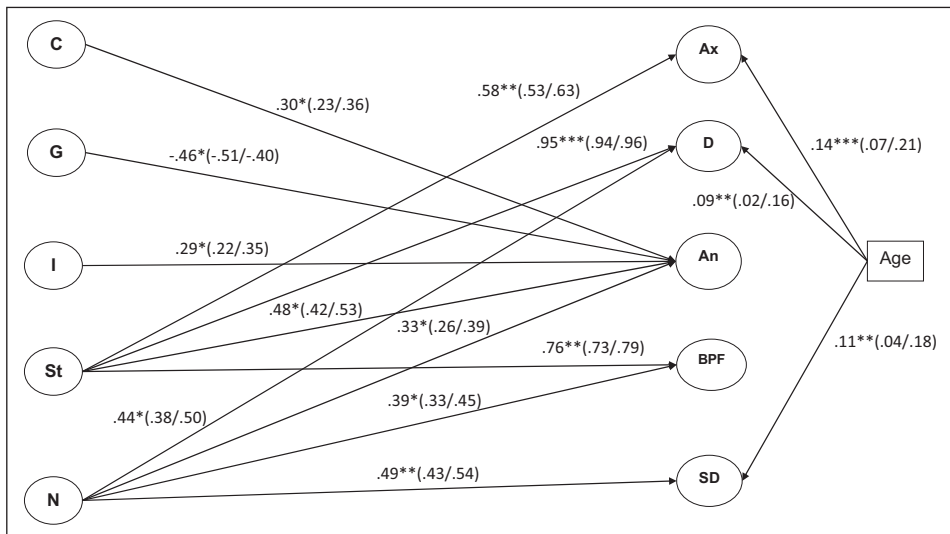


Figure 3. The structural model of emotion regulation difficulties and psychopathology in adolescence with statistically significant standardized path coefficients (Female sample).

Note. An = anger; Ax = anxiety; BPF = borderline personality features; C = lack of emotional clarity; D = depression; G = difficulties engaging in goal-directed behavior; I = impulse control difficulties; N = non-acceptance of emotional responses; SD = sleep disturbance; St = limited access to effective emotion regulation strategies. 95% confidence interval provided in brackets.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

$p < .05$). Impulse control difficulties also correlated with anger but in the positive direction ($\beta = 0.29, p < .05$). Limited access to effective emotion regulation strategies was associated with anxiety ($\beta = 0.58, p < .01$), depression ($\beta = 0.95, p < .001$), anger ($\beta = 0.48, p < .05$), and BPF ($\beta = 0.76, p < .01$). Non-acceptance of emotional responses formed significant associations with depression ($\beta = 0.44, p < .05$), anger ($\beta = 0.33, p < .05$), BPF ($\beta = 0.39, p < .05$), and sleep disturbance ($\beta = 0.49, p < .01$). Age was positively associated with anxiety ($\beta = 0.14, p < .001$), depression ($\beta = 0.09, p < .01$), and sleep disturbance ($\beta = 0.11, p < .01$), but all of these relationships were very weak. The remaining paths included in the model were statistically non-significant.

Discussion

The present study epitomizes one of the first attempts to examine the simultaneous predictive power of dimensions of emotion dysregulation on domains of psychopathology separately among boys and girls, using structural equation modeling (SEM). Our SEM model, specified and tested among Pakistani adolescents, demonstrated an adequate fit to the data in both genders and yielded important findings in this understudied socio-cultural context. In particular, our results revealed positive associations between adolescents' emotion dysregulation processes and five latent factors representing psychopathology. We also found some interesting similarities and differences in how emotion dysregulation dimensions associate with psychopathology variables in girls and boys. Overall, there were twice as many significant associations in the model tested among girls than the one tested among boys, indicating that emotion dysregulation may lead to more adverse mental health outcomes for girls. Interestingly, our study revealed an inverse association between anger and difficulties engaging in goal-directed behavior among girls.

Firstly, in line with previous research by Bender et al. (2012) as well as Weinberg and Klonsky (2009), we found that girls have less emotional clarity than boys. In contrast to this prior research, however, boys in our investigation reported less access to effective emotion regulation strategies than girls. Also in opposition to Bender et al.'s (2012) findings is the lack of significant gender differences in the levels of anxiety in the current study. Given prior research documenting that gender differences in depression rates start to emerge after the age of 15 years (Nolen-Hoeksema & Girgus, 1994), the lack of significant gender differences in depression scores in our study is less surprising. Quite unexpectedly, we found girls to score higher than boys on anger. Although prior research with Western respondents documented that males tend to demonstrate more powerful emotions (such as anger), whereas females are more likely to demonstrate powerless emotions (such as sadness) (Fischer et al., 2004), the observed discrepancy may be due to cultural differences. Overall, these results indicate that findings from emotion dysregulation research with WEIRD samples lack generalizability to non-WEIRD populations and highlight the importance of conducting more research in the less understood non-Western societies.

In addition to the above gender differences, higher levels of anxiety among boys were positively associated with lack of emotional clarity and non-acceptance of emotional responses, which is a way of suppressing emotions. Suppression of emotions may be used as a psychological defense providing some short-term reduction of discomfort among individuals with increased levels of anxiety. However, suppressing one's emotions can enhance anxiety levels when applied over an extended period. Our results are congruent with previous research findings, which indicated that high scores on lack of emotional clarity and non-acceptance of emotions can lead to social anxiety disorder (Mathews et al., 2014). Some other studies also reported a significant association between generalized anxiety disorder and deficits in emotional awareness (Roemer et al., 2009), lack of emotional clarity (Mennin et al., 2005; Salters-Pedneault et al., 2006), as well as non-acceptance of emotions (Mennin et al., 2009). Among girls, anxiety was positively associated with limited

access to emotion regulation strategies, which is in line with Bender et al.'s (2012) study. This indicates that adolescent girls who lack the ability to flexibly modulate emotional responses to meet desired goals and situational demands, are at an increased risk of feeling worry or fear.

The current study also revealed that male and female adolescents' higher levels of depression associated positively with non-acceptance of emotional responses. Among girls, depression was also related with limited access to effective emotion regulation strategies and this association was particularly strong. This finding is important as previous studies did not investigate associations between these aspects of emotion regulation and depressive symptoms in adolescence. Our results imply that adolescents who do not know how to deal with feeling upset and do not accept feeling upset as a normal part of human experience, may eventually feel overwhelmed by powerful negative feelings, resulting in increased depression. In addition, in the current context, cultural norms that support the inhibition of emotional experiences may contribute to the development of emotional maladjustment in adolescents. Previous studies support the notion that more frequent use of certain maladaptive emotion regulation strategies (e.g. thought suppression, expressive suppression, catastrophizing, and rumination) and less frequent use of adaptive emotion regulation strategies (e.g. self-disclosure and cognitive reappraisal) are related to depression and anxiety (Campbell-Sills et al., 2006). Worthy of note, although previous research demonstrated that anxiety and depression often co-occur and share many commonalities (Steer et al., 2008), the current results point to differential developmental pathways of the two diagnostic entities.

The present results suggest that emotion dysregulation may play a greater role in relation to anger in girls than it does in boys. Among boys, it was the lack of emotional clarity that led to anger. In girls, all five emotion dysregulation dimensions were related to anger scores and the model explained as much as 71% of variance in girls' anger scores. Overall, this finding is in line with previous research that revealed a positive association between anger and emotion dysregulation in adolescent population (Beauchaine & Thayer, 2015). Our study, however, provides an important extension to prior findings by indicating specific areas of emotion dysregulation that can account for angry feelings among girls and boys. The results reveal the importance of focusing on emotion dysregulation in preventive programs addressed at adolescent girls with externalizing problems in particular. A surprising finding was that the association between anger and difficulties engaging in goal-directed behavior was negative. In other words, girls who had more difficulties engaging in goal-directed behavior, had lower levels of anger. This relationship is unexpected, intricate, and nuanced. It may be that if goal commitment is low, inability to engage in goal-directed behavior will not trigger negative emotional activation. Indeed, previous research demonstrated that the association between anger and goal pursuit is mediated by "persistence to engage in achieving goals" and moderated by "action planning" (Schmitt et al., 2019), indicating that the relationship between goal-directed behavior and anger may be indirect.

Furthermore, the model we tested explained as much as 71% and 66% of variance in borderline personality features (BPF) among girls and boys respectively, confirming the significance of emotion regulation processes in the development and maintenance of this type of pathological personality structure. We found that adolescents' higher levels of BPF were positively associated with non-acceptance of emotional responses. Among girls, BPF scores were also related with limited access to effective emotion regulation strategies. This result is partially consistent with the findings of previous research, which reported adolescents with borderline personality to have elevated scores on overall DERS, and higher scores on two DERS dimensions: "impulse control difficulties" and "limited access to emotion regulation strategies" (Ibrahim et al., 2017). As long as the latter finding is in line with what we found in the female sample, impulse control difficulties scores were not significantly associated with BPF in the present study. One possible explanation for this discrepancy is that associations between BPF and emotion regulation difficulties differ among WEIRD and non-WEIRD adolescent populations.

In addition, our study indicated that adolescents' higher levels of sleep disturbances formed a positive association with non-acceptance of emotional responses, which lends support to previous research conducted with an adult sample (Sandru & Voinescu, 2014). Extant research also revealed a relationship between emotion dysregulation and sleep disturbance and suggested sleep disturbance to be an important aetiologic factor for psychopathology (Harvey et al., 2011).

There are important practical implications of the current study. For example, screening and monitoring of emotion regulation difficulties can be incorporated in educational settings to help prevent the development of full-blown personality disorders and mental illness among students. Our findings can also be used to design and tailor interventive strategies for adolescent girls and boys with particular mental health problems. Tailoring of such programs may be especially important in the context of externalizing symptoms. More specifically, it appears that girls who demonstrate powerful emotions (such as anger) may find tactics for developing effective emotion regulation in all domains especially useful. Furthermore, in considering the amount of variance explained by the model in BPF scores among both genders, we recommend that programs focusing on building understanding and acceptance of as well as teaching effective strategies to deal with negative emotions in particular are developed for all adolescents to avoid the development of a full-blown borderline personality disorder (BPD) in adulthood. Finally, given the amount of variance explained in psychopathology by emotion regulation difficulties among boys and girls, universal prevention programs designed to improve mental health among school students (especially those without diagnosable disorders) can use a measure of emotion regulation difficulties (such as the DERS and DERS-16) as one of the outcome measures for program evaluation.

The findings of the study should be evaluated in view of certain limitations. Firstly, the current study relied solely on self-report data; hence, it is prone to problems of reporting bias and demand effects. For further validation of the findings, studies using different assessment techniques, such as parents' report and other behavioral and physiological measures of emotion regulation, are warranted. Secondly, the use of cross-sectional design limited our ability to draw conclusions regarding the directionality of effects. Future research may incorporate a longitudinal study design to determine temporal links among the study variables and to enable analysis of indirect effects.

In sum, the results of the current study revealed significant positive associations between dimensions of emotion dysregulation and different forms of psychopathology among Pakistani adolescent boys and girls, with the exception of one inverse association between anger and difficulties engaging in goal-directed behavior. Non-acceptance of emotional responses formed significant, positive associations with all forms of psychopathology among boys and all forms of psychopathology except for anxiety among girls, indicating the importance of addressing this aspect of emotion regulation in preventing and alleviating mental health problems. Considering the large amount of variance explained by the model in BPF (among both boys and girls) and anger (especially among girls) scores, it appears that programs teaching adolescents how to deal with negative emotions may be especially effective in reducing the number of adults with BPD and anger issues.

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