

## ORIGINAL ARTICLE

# The Role of Negative Automatic Thoughts as a Mediator in the Relationship between Maternal Attachment and Depressive Symptoms among Late Adolescents of Pakistan

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## ABSTRACT

**Introduction:** Negative automatic thoughts refer to subconscious thinking patterns in response to irrational and self-defeating stimuli. Individuals who are depressed tend to have biased negative automatic thoughts. Therefore, there is a need to refine our understanding of what contributes to the development of adolescent depressive symptoms. The current study examined the mediating role of negative automatic thoughts in the link between maternal attachment and depressive symptoms among late adolescents in Pakistan. **Methods:** This cross-sectional study focused on 936 (males=423, females=513) students aged 17 to 19 years old, who were selected through multistage cluster sampling technique. Respondents answered self-report questionnaires which assessed maternal attachment, depressive symptoms, and negative automatic thoughts. Structural equation modelling was utilised to analyse the relationships among the research variables. **Results:** The findings indicated that 39.3% had negative automatic thoughts; whereas, 5.6% experienced severe depressive symptoms. Correlational analysis showed that maternal attachment had a negative association with depressive symptoms and negative automatic thoughts. In contrast, depressive symptoms were positively related to negative automatic thoughts. Structural analysis revealed that negative automatic thoughts partially mediated the association of maternal attachment with depressive symptoms among late adolescents. Findings specifically demonstrated that those with insecure maternal attachment tend to have negative automatic thoughts, which subsequently lead to depressive symptoms. **Conclusion:** In conclusion, findings highlight the importance of secure attachment to the mother and positive automatic thoughts in combating depressive symptoms; thus ensuring a healthy psychological development for adolescents.

**Keywords:** Maternal attachment, depressive symptoms, negative automatic thoughts, late adolescents.

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## INTRODUCTION

Late adolescence is a critical developmental period because of the simultaneous and rapid changes that occur at physical, emotional and cognitive level (1). These changes can be positive or negative depending upon how adolescents adjust to these variations. If adolescents adapt poorly to these developmental vicissitudes then they may face psychological health issues such as development of depressive. Depressive symptoms are the common health problems among adolescents worldwide and Pakistan is no exception. Epidemiological studies (2,3) estimated that depressive symptoms often escalate during late adolescence, affecting adolescent's education, marital timing and its stability, role performance, employment status, parental

functioning, financial success (4, 5). Depressive symptoms have also found to be positively associated with other disorders such as anxiety, disruptive behaviour disorder, substance misused problems, eating disorder, autism spectrum disorder, and attention deficit hyperactive disorder (5). In Pakistan the prevalence range of depressive symptoms among adolescents reported in various studies are from 26 to 72% (6, 7). These symptoms are one of the leading causes of disability among adolescents in Pakistan (8). Therefore, understanding what factors contribute to the development of depressive symptoms among late adolescents of Pakistan is imperative for prevention and intervention efforts aim at promoting their psychological health and well-being.

Literature has indicated that among number of risk factors quality of maternal attachment is one of the prominent factors that cause depressive symptoms in adolescents, with lower level of maternal attachment is related to high level of depressive symptoms (9, 10). Nonetheless, there is lack research which identifies the mechanism

that elucidates the link of maternal attachment with depressive symptoms among adolescents. Moreover, some groups are more at risk for emotional problems such as adolescents, high stress community, females, or those belong to low-income families (11). The purpose of the present study is to examine the mechanism between maternal attachment and depressive symptoms among late adolescents in Pakistan, through negative automatic.

Cognitive theory (12, 13) and Attachment theory (14) has explained the mechanism that cause depressive symptoms. According to Beck (12) the automatic thoughts which are negative in nature instigate depressive symptoms. The negative automatic thoughts are produced when the relevant negative beliefs interact with the situation. However, there are networks of assumptions, beliefs, rules and formulas present in internal representation system. These networks are often linked with the memories which are associated to the development and construction of such beliefs (12, 13). Cognitive theory (13) pointed that if early life experiences specifically relationships with significant others were unpleasant then maladaptive thoughts about world, self and future may develop which subsequently will leads to psychological problems.

Bowlby (14, 15) has described the role of Internal Working Models (IWMs) in attachment relationships. According to Attachment theory, IWMs are the mental representation of self, environment and others, developed during early years of life through repeated experience with the caregiver (14, 15). These experiences become organized as script, which in turn become the foundation of broader representations, future relationships and interpretation of events (16). Past studies (17) suggested that quality of attachment develop which includes high level of trust and good communication and low level of alienation, predict the nature of IWMs. Moreover, much of the psychopathology developed because of the negative and maladaptive IWMs (14, 15), which needs to be explored further.

The integration of Beck (12) and Bowlby (14) concepts assumed that individual's constant positive experience with the care giver such as mother develop secure attachment which in turn formed the mental representation of self as worthy, lovable and motivated to provide care to others, of others as responsive to their distress and would be available, and of world as caring and secure place. The adaptive IWMs in turn maintain the psychological health of the adolescents. On the other hand, if there is insecure adolescent-maternal attachment then complementary working model of the self as unworthy, flawed and unlovable, and negative appraisal of environment and expected future would be developed which leads to depressive symptoms. Based on the integration of these theories, maternal attachment

was taken as the predictor of depressive symptoms by taking negative automatic thoughts as a mediator.

### **Maternal-adolescent attachment and depressive symptoms**

Attachment with mother is the enduring bond that may vary in meaning in different developmental stages (14). The perceived accessibility and responsiveness of the mother as a primary care giver determine the quality of attachment between child and mother. Good communication, positive response and greater availability give rise to a more secure attachment, whereas any disruption and problem in the mother-child relationship may develop insecure attachment (15). The insecure pattern of attachment may be associated to the development of behavioural and emotional problems (18).

In line with the theoretical assumptions that quality of mother-child attachment during infancy and childhood is precarious to the development, ample of research on attachment has been conducted with infants or children (19). However, past studies stated that pattern of attachment from childhood to adolescence generally remain stable (20, 21). Besides, comparing with peer attachment, parental attachment is the strong predictor of adolescent's developmental outcome (22). In this sense, recent study constantly reported warmth, supportive and positive parent-child attachment relationship as an important protective factor for adolescents who are at risk of psychological problems (23). Consequently, scholars have begun to explore the role of attachment relationships during adolescence in different contexts (21).

Specifically, the researchers are more interested and emphasizing the impact of attachment relationships on adolescent depressive symptoms (24). A positive adolescent-parent attachment provides a secure base and a safe haven for adolescents to survive in times of turmoil, facilitates the exploration of new things and acts as a buffer against the development of depressive symptoms (15). On the other hand, depressive symptoms may be outcome of the insecure attachment with the mother, which lead adolescents to develop a perception that others will respond negatively during challenging situation or become unavailable (14, 15). In a normative sample, adolescents were more securely attached with their mothers compared to their fathers and secure attachment with mothers protected them from experiencing depressive symptoms (24, 25). Similarly, Agerup et al. (26) reported that adolescents with insecure attachment to their mothers were more at risk of suffering depressive symptoms. Additionally, when maternal attachment was studied together with other potential predictors, such as paternal attachment, social skills and self-esteem, the maternal attachment accounted for the highest percentage of variability in

youth depressive symptoms (27).

Some of the limitations of the studies just cited included that most of the studies were cross-sectional analysis measuring the direct relationship. Even though exploration of the associations among the constructs is worth it but the correlational cross-sectional studies impede the ability to describe the prediction and causal effect which is vital for the development of prevention plan. However, the prediction in cross sectional studies can be measured by performing more robust analysis techniques and results produced may provide baseline knowledge for conducting longitudinal studies. Secondly, there has been dearth of research on the role of potential mediators among attachment and depression (21). Thirdly, scant studies are available on these variables in Asian context such as Pakistan. Studies in Pakistan examined the parental attachment with identity styles (28) and attachment style with mental health problems (7). According to the knowledge of the authors, no study in Pakistan has been found that established the association between maternal attachment and depression through negative automatic thoughts, suggested that further research is required in Pakistan on these linkages.

### **Mediating effect of negative automatic thoughts**

The negative automatic thoughts are the irrational beliefs and thinking about self, others and future. Clark and Beck (29) stated that negative automatic thoughts about the self and world are based on the core beliefs, formed by self-reinforcing cycle that influence individual's maladaptive behavior and emotional dysregulation. Scholars (13, 30, 31, 32) consistently reported the role of negative cognitions in the odds of depressive symptoms in terms of low self-esteem, greater pessimism about the future, more frequent polarized construing, increased interpersonal isolation, self-blame and negative thinking patterns. However, negative automatic thoughts have played a pivotal role in the development of symptoms of depression (30, 31).

The integration of the Beck et al. (13) and Bowlby (14) suggested that the negative thinking patterns bridges the relationship between maternal attachment and depressive symptoms. However, few studies are available that investigate the mediation effect of negative automatic thoughts (33, 34) and far little literature has been found that establish the mediating effect of negative automatic thoughts between maternal attachment and depressive symptoms among late adolescents. For example, Hwang and Lee (34) investigated the intervening effect of negative thinking only among children and found that the relationship between father's communication and child happiness was partially mediated by negative automatic thoughts. On the other hand, Safford et al. (32) discovered that negative cognitive style did not mediate the association between attachment relationships and symptoms depression and anxiety.

In addition, prior research on the attachment theory consistently established that if adolescents perceive their mother as trustworthy, responsive and supportive then they develop a positive and adaptive internal working models (15). Recent researchers have stated that individual with the history of secure attachment process information in positive manner, have positive expectations from social interaction, hold positive self-concept, better emotional and social understanding, and progressive consciences development while the insecure individual more often defensively exclude information that cause psychological pain and process information in negative biased manner (17, 21). Parental attachment particularly with mother may also decrease the psychological distress of the adolescents during stress result in more cognitive adjustment of the stressful situation.

### **The present study**

The review of the literature showed that in Western societies abundance of the studies described the significance of mothers in maintaining psychological health of adolescents. Nevertheless, little is known on the mechanism through which attachment to mother affects the development of depressive symptoms of adolescents. Moreover, in Pakistan far little is known about linkages. Thus, the present study attempted to replicate the study in a Non-Western society and add in the existing research by testing the hypothesis that positive maternal attachment would be related to the lower level of the depressive symptoms among the late adolescents in Pakistan. Besides, the current study explored the possible role of the mediator in association between maternal-adolescents attachment and depressive symptoms.

### **METHODOLOGY**

The present study is a correlational cross sectional study where data was collected through survey. The description of the methodology followed in the present study is described as below.

#### **Participants**

A total of 936 (males=423, females=513) late adolescents aged 17 to 19 ( $M=17.79$ ,  $SD=.696$ ) were recruited from six government colleges in Rawalpindi district, Pakistan. Sample was collected only from government colleges because most of the late adolescents in Pakistan are studying in the public institutes. A recent report demonstrated that at higher secondary or Inter Colleges level, 1.325 million out of 1.697 million students are enrolled in public sector (35). Additionally, respondents were identified through multistage cluster sampling where clusters were selected randomly in three phases. In the first stage three tehsils (subdivision of district) were selected. Generally, at higher secondary level the government colleges in Rawalpindi are single gendered. Therefore, in the second stage one male and

one female college from each identified tehsil were selected. Lastly, one class from three major courses (i.e., arts, science and computer sciences) in XI and XII year were selected. In total, six classes from six colleges were taken. Based on the demographic information most of the adolescents were muslims (99.7%), single (98.6%), came from intact family (99.6%), had mothers who were middle aged ( $M=42.7$ ,  $SD=5.8$ ), educated (64.6%) and majority (92.9%) unemployed. Moreover, 97.5 percent of participants stay with their parents and spent most of their time with parents.

## Measures

### Maternal attachment

In this study, IPPA-Urdu (36) was used to assess the perception of positive (secure) and negative (insecure) affective dimensions of late adolescent's attachment relationships with their mother. The IPPA-Urdu for maternal attachment scale with 25 items, consisted of three subscales which are trust, communication, and alienation. The items in the scale are rated on a five point Likert-type scaled ranging from 1 (never or never true) to 5 (always true or almost always). Negatively worded items were reverse coded before running analysis. Higher scores on the IPPA-Urdu scale indicated secure attachment with mother and low scores on this scale indicated insecure attachment. This scale has been reported to have good internal reliability (.86) and content validity (36). In the current study, the internal reliability for this scale was .84. In addition, the convergent and discriminant validity of the scale was good (see Results).

### Depression anxiety stress scale (DASS)

DASS-Urdu (37) scale has three subscales assessing depression, anxiety, and stress of adolescents. However, for the present study, only the depression subscale was utilized. This scale is rated on a 4-point Likert scale where "0" indicated "it did not apply to me at all" and 3 indicated to be "very much or most of the time applied to me". Scoring of this scale is divided into five categories where scores between 0-9 are considered as normal, 10-13 as mild depressive symptoms, 14-20 as moderate, 21-27 as severe, 28 and above is extreme depressive symptoms. The DASS-Urdu (depressive symptoms scale) had an excellent internal reliability (.93) and high inter-language validity (37). In the present study, this scale shows good internal reliability (.83), and good convergent and discriminant validity.

### Negative automatic thoughts

Automatic thoughts questionnaire (ATQ-Urdu) (38) is a 30-item scale used to assess negative self-statements and thinking pattern related to depression. Participants rated items on a 5-point Likert scale (e.g., 1 = not at all to 5 = all the time) based on the frequency of each thought during the preceding week. Total high score indicated high level of automatic negative self-statements and greater believability in negative thoughts. The ATQ-Urdu

has been reported to have an excellent reliability (.96) and concurrent validity (38). In this study the reliability of ATQ-Urdu was excellent (.93). Additionally, this scale demonstrated good convergent and discriminant validity.

## Procedure

Prior to data collection, ethical approval was obtained from the Ethical Committee of Universiti Putra Malaysia and the Education directorate Rawalpindi colleges. Next, permissions from the principals of the selected colleges were obtained in order to collect data from their colleges. Consent forms were distributed to students aged 18 to 19 years old and to parents of students aged 17 years. The self-report measures were administered in the classrooms. The participants completed the booklet in 30-45 minutes. All queries regarding the study were answered by the researcher.

## RESULTS

Two softwares including Statistical Package for Social Sciences (SPSS) and Analysis of Moment Structures (AMOS) were used to analyse the data. Skeweness and kurtosis ranged between -2 to +2 was applied to check the normality of the data (39). Multicollinearity was checked through variance inflation factor (VIF) and tolerance values (40). Additionally, descriptive analysis, pearson correlation was conducted to determine the correlation between the variables. Mahalanobis distance (D2) tested for multivariate outliers, by using p1 and p2. Next the validity and reliability was examined by measurement modelling and hypotheses were tested by structural equation modelling analysis. The structural model explored the mediation effect of negative automatic thoughts in relationship between maternal attachment and depressive symptoms through bootstrapping. The path analysis applying structural equation modelling (SEM) programs are employed to test the direct effect, mediation relationships and also the indirect paths between constructs which are not associated directly (41).

SEM procedures are better than other method for testing mediation because it produced results by taking into account the measurement errors and test the whole model simultaneously. To decide whether there is indirect effect, partial or full mediation, Baron and Kenny (41) method was followed. Initial model fit was achieved through the criteria recommended by Hair et al. (40), that at least one fitness indices from each category (i.e., absolute fit, incremental fit and parsimonious fit) of model fit. However, following this criteria the model fit was examined by Root mean square error of approximation (RMSEA)  $< .08$  (42), Tucker-Lewis Index (TLI)  $> .95$  (42) and relative Chi-square  $< 5.0$  (43). These model fit indexes were applied to achieve the model fit in three types of models including, measurement models, direct models and mediation model. Secondly,

the significance of direct and indirect paths was reported.

### Treating the missing values

The data were missing completely at random (MCAR) where some variables had more than 5% missing values such as mother age (16.9%), item number 14 of depressive symptoms (5.6%). Therefore, imputation was done through Expectancy Maximization.

### Descriptive analysis

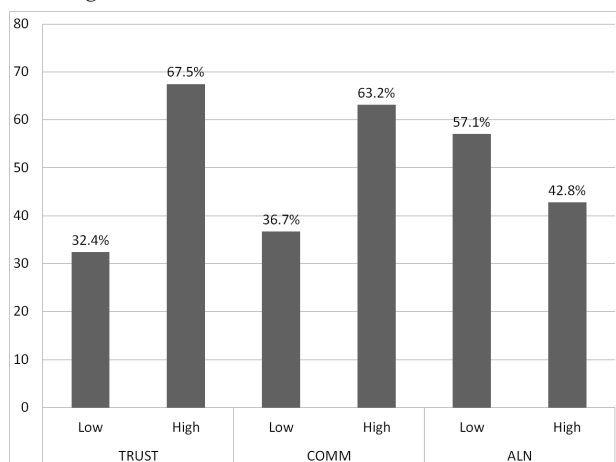
The descriptive analysis for the present study includes mean, standard deviation, skewness, kurtosis, VIF, tolerance, frequencies, percentages and correlation is as presented in Table I.

**Table I:** Frequencies, percentages, means, standard deviations, normality (N=936)

		n (%)	Mean	SD	Skewness	Kurtosis
MAT			100.0	14.533	-.749	.129
TRUST	Low	304 (32.4)	41.6	6.28	-1.432	2.337
	High	632 (67.5)				
COMM	Low	344 (36.7)	36.3	6.3	-.981	.636
	High	592 (63.2)				
ALN	Low	535 (57.1)	18.3	4.5	-.397	-.497
	High	401 (42.8)				
DEP	Normal	443 (47.3)	11.86	8.26	.829	.277
	Mild	148 (15.8)				
	Moderate	200 (21.3)				
	Severe	92 (9.8)				
	Extreme	53 (5.6)				
NAT	Less	568 (60.7)	62.28	22.72	.921	.213
	Extreme	368 (39.3)				

Note: n=Frequency, SD= Standard deviations, MAT = Maternal Attachment, COMM=Communication, ALN=Alienation, DEP = Depressive Symptoms, NAT = Negative Automatic Thoughts, Significance \*\*p<0.01

Multicollinearity was not found among the variables as VIF (1.17)<10 and tolerance (0.849)>0.10. Moreover, most of the respondents trust the availability of their mother, have healthy communication, and low level of feeling of alienation with mother; this shows that most of the adolescents have high level of maternal security (See Fig. 1).



**Figure 1: Descriptive analysis.** Adolescents reported of having an overall secure relationship with their mothers. A large proportion of adolescents reported having high level of trust (67.5%) and communication (63.2%), and low level of alienation (57.1%) with their mothers.

Meanwhile, the prevalence of depressive symptoms indicated that 47.3% of the students were normal, 15.8% had mild, 21.3% had moderate, 9.8% had severe and 5.6% had extreme depressive symptoms. In terms of negative automatic thoughts 39.3% of the students reported tendency to think negatively and 60.7% had relatively less negative thinking patterns. The correlational results indicated that maternal attachment is negatively related to depressive symptoms (-.35) and negative automatic thoughts (-.38) while depressive symptoms and negative automatic thought (.74) are positively related with each other.

### Measurement model

A measurement model was established for the three latent constructs including maternal attachment, negative automatic thoughts and depressive symptoms by using confirmatory factor analysis. In case of maternal attachment two factor model (i.e., Trust-Communication & Alienation) provided a good model fit with adequate factor loadings. The trust and communication factors were combined in one factor because high correlation was found between these two factors ( $r=-.982$ ,  $p<.001$ ). For maternal attachment construct six parcels under trust-communication factor and two under alienation were formed by using correlation algorithm (44). The CFA of the two factor parcel model for maternal attachment construct showed good model fit (relative Chi-square=4.79, RMSEA=.06, TLI=.95) and significant ( $p<.001$ ) factor loadings from .461 to .827, mentioned in Table II.

**Table II:** CFA and discriminant validity index summary for the measurement model of all constructs

Construct	Parcel items	Factor Loadings	CR	AVE	MAT (r <sup>2</sup> )	DEP (r <sup>2</sup> )
MAT	SMP-item1	.704	.865	.437		
	SMP-item2	.726				
	S2MP-item3	.461				
	SMC-item4	.827				
	SMC-item5	.634				
	SMC-item6	.588				
	SMA-item7	.484				
	SMA-item8	.770				
DEP	DEP-5	.866	.836	.512	.202	
	SDEP-4	.628				
	SDEP-3	.838				
	SDEP-2	.641				
	SDEP-1	.549				
NAT	SNAT-1	.455	.915	.526	.273	.499
	SNAT-2	.613				
	SNAT-3	.729				
	SNAT-4	.677				
	SNAT-5	.678				
	SNAT-6	.831				
	SNAT-7	.786				
	SNAT-8	.809				
	SNAT-9	.768				
	SNAT-10	.819				

AVE=Average variance extracted, CR= Composite/Construct reliability, r<sup>2</sup> = Square of Correlation

For the depressive symptoms construct, five parcels were developed. Although, factor loadings were good but the model did not provide a good fit. Therefore, covariance was drawn among measurement error of 1 with 2 and 4, and 2 with 3. The improved depressive symptoms CFA model had a good fit (relative Chi-square=3.15, RMSEA=.05 TLI=.99) and a significant ( $p<.001$ ) factor loading between .549 and .866. In order to model negative automatic thoughts ten parcels or indicators were created through correlation algorithm. The factor loadings for the construct were good but model did not achieved goodness of fit. Thus, covariance were drawn between the measurement errors of 1with 7 and 10, 7 with 3, and 5 with 6. The amended CFA measurement model provided a good fit (relative Chi-square=4.73, RMSEA=.06, TLI=0.97) with a factor loadings ranged from .455 to .866 significant at .001.

The construct/composite reliability of constructs ranged between .836 and .915, shown as good reliabilities (45). Additionally, average variance extracted (AVE) ranged between .437 and .538 illustrated that all constructs has adequate convergent validity (45). In order to check the discriminant validity the AVE was checked against square of correlation of each constructs (46). It was found that all three constructs have good discriminant validity as shown in Table II.

**Structural model**

The hypothesized model was developed by considering maternal attachment, negative automatic thoughts as an exogenous variables and depressive symptoms as endogenous variable. The direct model examining the linkage between maternal attachment and depressive symptoms based on the literature. The model provided a good fit where relative Chi-square is 2.74, RMSEA is .04 and TLI is .96. As mentioned in Table III the beta value (-.400) of the direct relationship between variables are negative and significant. Nonetheless, the direct model depicted a significant relationship between maternal attachment and depressive symptoms for the sample of current study, which suggest to test the true mediation (41).

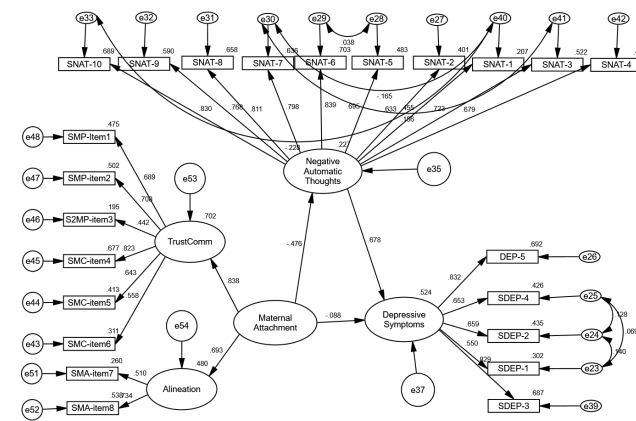
**Table III:** Mediation table

Hypothesised path	95% CI			
	Beta	p	Bootstrap BC	
LB			UB	
<b>Direct Model</b>				
Maternal Attachment $\Rightarrow$ Depressive Symptoms	-.400	.000		
<b>Full Mediation Model</b>				
Maternal Attachment $\Rightarrow$ Depressive Symptoms	-.088	.039		
Std. Indirect Effect (SIE)	-.323	.000	-.396	-.260

CI=Confidence Interval, LB= Lower Limit, UP=Upper Limit

To test the mediation, CFA of negative automatic thoughts was merged with the direct structural model, generating mediation mode. The maximum likelihood

was used to estimate the model whereas; bootstrap procedure presented by the Hayes (47) was applied to test the mediation, suggested to set the resampling at 5000 times. The standardized coefficients, significance level, upper bounds and lower bounds for the paths are presented in Table III. The overall fit for the mediation model resulted in chi-square=582.79 and  $p=.000$ . The fit indices yield relative Chi-square of 2.67, RMSEA of .04 and TLI of .96 (See Fig. 2).



**Figure 2: Structural model.** SEM analysis revealed a good fitting mediational model where  $\chi^2=582.79$ ,  $\chi^2/df=2.67$ ,  $p < 0.001$ , TLI = 0.96, RMSEA = 0.04. The model accounted for 52.4% of the variance in depressive symptoms. Results further revealed that negative automatic thoughts partially mediated the relationship between maternal attachment and depressive symptoms.

The model accounted for the 52.4% of the variance in depressive symptoms. In addition, Table III illustrated that the beta value decreases (-.088) after introducing negative automatic thoughts as a mediator but still remain significant ( $p=.039$ ). Further, the indirect (SIE=-.323, CI -.396 to -.260) relation is also significant which shows that the negative automatic thoughts mediated partially. However, all the hypothesized paths were significant in the expected direction.

**DISCUSSION**

The aim of the study was to reconnoitre the predictor of depressive symptoms through interplay of negative automatic thoughts and maternal attachment among late adolescents in Pakistan. The reason was that depressive symptoms are very prevalent among adolescents in Pakistan (6, 7). Similar results were observed in the current study, demonstrated 52.2 % occurrence ranged between moderate to severe, which is quite high. Further, the findings of this study suggested that most of the Pakistani late adolescents considered their mother as accessible, responsive to their emotional needs and trustworthy, resulting into secure maternal-adolescents attachment. Literature on the adolescent-maternal attachment in Pakistan is inadequate (7). However, in the present study most of the adolescents' mothers were housewife. This allowed adolescents to spend more time with their mothers thus developing a strong bond between them. Comparing with Asia the

research presented inconclusive findings regarding maternal-adolescent relationships. For instances, a cross-cultural study was conducted to examine the preferred attachment figure among adolescents of China (N=350), Italy (N=352) and Costa Rica (N=343). Findings indicated that adolescents of Italy and Costa Rica scored higher on maternal attachment compared to those in China (48). In contrast, Natarajan (49) found that adolescents in India were more securely attached to their mothers. This highlighted a need to conduct more studies in Asia to clarify the attachment relationships construct. Moreover, almost one third of the adolescents had negative thinking patterns. Late adolescents may experience negative thoughts due to the metamorphoses changes from which they are going through when physical, cognitive and socio-emotional changes affect their thinking patterns (1).

The correlations between maternal attachment with depressive symptoms and negative automatic thoughts are moderate and significant but correlation between depressive symptoms and negative automatic thoughts were relatively strong. These results can be interpreted in two ways, firstly in the perspective of past studies and secondly in the Pakistanis context. Almost all of the past studies conducted in Western societies presented the same association among these variables, such that negative automatic thoughts and depressive symptoms were positively correlated to each other but negatively related to maternal attachment (26, 29). The moderate relationship shows that maternal acceptance and responsiveness may have modest role in predicting the depressive symptoms among Pakistani youth. This findings can be interpreted that may be some other interpersonal relationships such as, father or peer may be more influential on depressive symptoms of youth in Pakistan as compare to mother. It is well established in the literature that during late adolescence, peer influence increases (15, 16, 22).

The analysis of hypothesis revealed that negative automatic thoughts partially mediated the link between maternal attachment and depressive symptoms. Previous studies (32, 33, 34, 31) have reported inconsistent mediating role of negative automatic thoughts. However, the integration of the Beck et al. (13) and Bowlby (14) concept described the mediating effect of negative automatic thoughts. Therefore, the findings of hypotheses were theoretically supported. The findings suggest that adolescents who perceive their mother as warm, receptive towards their needs and available at the time of distress are likely to engage in more positive thinking which facilitate them to maintain a healthy life style and seek support from others. Contrary to this, poor maternal attachment trigger negative automatic thoughts which then effect experiences of adolescents with reference to dysfunction i.e., developing of depressive symptoms (13, 14). It should be noted here again that previous studies and theory was mostly tested

in the Non-Western societies, not in Pakistan. According to WHO (50) report Pakistan is among the low income country with a lot of social constraints, therefore people of Pakistan are more vulnerable to distress. Thus, in the face of various uncontrollable stressors, youth may use their interpersonal relationships as a source of comfort and explore the world by developing positive view about themselves, world and future.

There are few limitations of this study. It is a cross sectional study, self-reported administered and data may suffer from the common variance bias because the information obtained was from one informant. The data was drawn only from government colleges of the Rawalpindi district. Moreover, the respondents of the study were predominantly well-adjusted students with few depressive symptoms thus the generalizability of the study is only on normative sample. It may be possible that the link between maternal attachment, negative automatic thoughts and depressive symptoms is different in clinical sample. These limitations can be used in future research in number of ways. Firstly, longitudinal study need to be organized in Pakistan to assess the causality among these variables. Secondly, future studies may consider including data from different provinces of Pakistan and compare the perception of attachment relationships and their impact on developmental outcome.

## CONCLUSION

The findings of the study suggested that maternal attachment play an important role in developing internal working models among adolescents in Pakistan. The theoretical implication of this study is that it supported the integration of Beck's cognitive and Bowlby's attachment theory highlighted that negative automatic thought are the maladaptive internal working model which is triggered because of poor maternal attachment and would increase the vulnerability to depressive symptoms. This study advances the literature on attachment theory and cognitive theory by applying the concept in Asian culture which is understudied in theory and research. For clinical implication, these findings provide a foundation to develop family based treatment for adolescent depressive symptoms and may also integrate cognitive theories to change the negative cognition. The findings also pinpoint to develop community based prevention programs which could enhance adolescent strengths to cope with psychological issues.

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