

**Journal of Social Sciences Research & Policy (JSSRP)**
**The Mediating Role of Negative Core Beliefs in Parental Acceptance Rejection and Cognitive Distortion among Young Adults**
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**ISSN:** 3006-6557 (Online)

**ISSN:** 3006-6549 (Print)

**Vol. 3, No. 1 (2025)**
**Pages:**
**Key Words:**

 Parental Acceptance-Rejection,  
 Negative Core Beliefs,  
 Cognitive Distortion, Young Adults

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**Abstract:** Theoretically, parental acceptance-rejection is linked to negative core beliefs and cognitive distortion. However, this association requires further empirical support. Therefore, this study aimed to investigate the mediating effects of negative core beliefs between parental acceptance-rejection and the formation of cognitive distortions among a Pakistani normative sample of young adults between the age range of 18 to 25 years. A cross-sectional correlation research design was employed, and a sample of 325 participants was recruited using a convenient sampling technique. The following standardized measures were used to collect data the Parental Acceptance-Rejection Scale (PARQ), Negative Core Belief Inventory (NCBI), and Cognitive Distortion Scale (CDS). The results revealed a significant positive association between parental acceptance-rejection, negative core beliefs, and cognitive distortions. Furthermore, negative core beliefs and cognitive distortion including mind reading and should statements, were found to be significant predictors of parental acceptance-rejection. Mediation modeling using Hayes' PROCESS macro unveiled that the overall negative core belief played a significant partial mediating role in the relationship between parental acceptance-rejection and specific cognitive distortions. However, the mother's acceptance-rejection was found to be an important factor associated with negative core beliefs and cognitive distortions, including mind reading and should statements. In contrast, the father's acceptance and rejection did not have a significant impact on cognitive distortions. Nevertheless, negative core belief fully mediated the association between paternal acceptance-rejection and cognitive distortions of mind reading and should statements. The study concluded that negative core beliefs about the self serve as a pivotal mediator between parental acceptance-rejection and cognitive distortions. While maternal rejection played a vital role in the formation of negative core beliefs and cognitive distortions.

**Introduction**

Parental acceptance-rejection is a broad term that describes a variety of factors that influence the nature of the relationship between parents and children and its long-term effects on the child (Rohner et al., 2003). This idea is based on the PAR theory, which has evolved over the years but still provides grounds to understand how children perceive and are affected by parental acceptance or rejection. In essence, there are numerous concepts within PAR theory. In PAR theory, parental acceptance-rejection refers to a bipolar dimension of parental acceptance at the positive end of the continuum and parental rejection at the negative end. Parental acceptance refers to the love, affection, care, support, and nurturance that parents can feel and express toward their children. Parental rejection refers to the absence or withdrawal of warmth, love, or affection by parents towards their children (Rohner & 2002). Parental rejection has serious consequences for psychological development and personality functioning in both children and

adults. The poor parent-child relationship gives rise to and establishes the negative core beliefs that persist in adult life. The negative core beliefs are defined as cynical intrinsic as well as extrinsic thought patterns deeply ingrained in individuals due to various factors (Dunkley et al., 2006).

This concept is further complemented by Beck's widely accepted model of emotional distress. It persists that the core beliefs planted in childhood with the union of sociocultural experiences of an individual give birth to his different attitudes for the rest of his life. Early childhood stressful events, particularly parental rejection, can lead development of negative core beliefs, making individuals more prone to emotional distress (Beck et al., 1979). Negative core beliefs are instinctive because the individual is accessing the situation according to his negative core beliefs rather than being impartial to reality (Beck, 1976). These negative core beliefs result in depression. The negative core beliefs directly influence the thoughts which in turn influence the emotions and actions of the individual.

While parental rejection inevitably contributed to the formation of negative core beliefs, its impact is more profound on a child's self-esteem. This diminished self-worth in children further exacerbates the formation of negative core beliefs about self, others, and the world. These negative beliefs set the stage for cognitive distortions which are a constant fallacious cognitive functioning of an individual that results in flawed intellectual as well as adaptive functioning. These cognitive distortions have different types (a) *negative prediction*, (b) *catastrophization*, (c) *overgeneralization* (d) *labeling and mislabeling*, (e) *magnification or minimization*, (f) *personalization*, (g) *mental filter*, (h) *disqualifying the positives*, and (i) *should statements* (Sternberg, 2009).

These cognitive distortions demonstrate how belief systems have a greater influence on the opinions and actions of individuals, especially those that are derived from early experiences of parent's acceptance or rejection. As mentioned above, the parent-child relationship is the foundation of the core belief system thus it can be said that a child's self is influenced by a negative parent-child relationship eventually cultivating the negative core beliefs about his self thus leading towards negative distortion. Such individuals can fall into acceptance-rejection syndrome and comparatively are more prone to depression in ult life (Rohner et al., 2005). Thus, the researcher emphasizes the phenomenon of parental acceptance-rejection and its relationship with negative core beliefs and cognitive distortions in young adults. This association highlights the importance of PAR theory which substantiates the thesis of the researcher in which it is reported how parental acceptance rejection can lead to persisting negative core beliefs which as a result causes cognitive distortions, a negative personality development in young adults. The researcher emphasizes that negative core beliefs play a mediating role in parental acceptance rejection and cognitive distortions. The present study aims to investigate the association between parental acceptance-rejection, negative core beliefs and cognitive distortion in young and analyze how parental acceptance-rejection impacts these variables in young adults.

### Literature Review

Several studies have been conducted to explore the association of parental rejection with the perpetual core beliefs of individuals. However, this relationship still needs further exploration as available studies do not specify which type of cognitive distortion is linked with parental acceptance-rejection.

Childhood parental rejection is linked to a higher chance of aggressiveness in adulthood and is also believed to play a role in the formation of false beliefs about self or other people's behavior (also known as cognitive distortion). Smeijers et al. (2018) researched forensic psychiatric outpatients with aggression regulation problems. The findings indicated that adults with aggression regulation problems exhibited cognitive distortions, particularly related to opposition-defiance (e.g., disrespect for others), and physical aggression which was strongly linked to their disposition and there was a direct association between childhood parental rejection and adult aggression partially mediated by opposition-defiant cognitive

distortions. According to one study's findings, dating anxiety and interpersonal cognitive distortions were positively correlated with perceived parental rejection in university students. The results showed that the association between dating anxiety and perceived maternal rejection was partially mediated by interpersonal cognitive distortions. However, it was discovered that dating anxiety was directly impacted by parental rejection, and cognitive distortions had no moderating influence on this link (Epli et al., 2021). In one research, the results showed that perceived levels of parental rejection and maternal control positively predicted adolescents' social anxiety levels and interpersonal cognitive distortion levels. It was found that unrealistic relationship expectations played a partial mediator role between mother's rejecting and controlling attitudes and adolescents' social anxiety levels. Interpersonal rejection (cognitive distortion) played a full mediator role between rejecting attitudes of mothers and fathers, controlling the attitude of the mother but not controlling the attitude of the father; and the social anxiety level of adolescents (Sireli & Colak, 2024). Moreover, Akün (2017) selected participants with mental disorders including adults with schizophrenia and social. It was found that later mental health is strongly associated with early parental behaviors and positive experiences of parental acceptance can assist to improve adult mental health whereas rejection can cause increased symptoms. It also highlights the long-term influence of early familial relationships on an adult's psychological well-being. This distinctive research showed that parental rejection makes individuals more prone to psychological maladjustment (Akün, 2017). Despite these convincing research findings, more research evidence is required to explore the phenomenon of parental rejection and cognitive distortion.

An experimental study was conducted to examine the impact of parent-adolescent relationships on early childhood to early adolescence cognitive development continuity. The study highlighted the importance of positive interactions for maintaining and enhancing early childhood cognitive growth. It was also found that negative interactions can disturb the developmental continuity eventually causing adverse cognitive and emotional outcomes for adolescents (Dunham et al., 1988). Furthermore, McKinney et al. (2008), concluded in their study there exists a correlation between the perceived parental image and emotional adjustment; where positive perception of parenting leads to better emotional adjustment in late adolescence, and negative perception of parenting cause difficulties in emotional adjustment and psychological problems. Recently a study was conducted to assess whether emotional and behavioral difficulties in children are predicted by parental attitudes and perceptions of acceptance and rejection of mothers or whether the relationship was mediated by the attitudes of the parents. The findings of this study indicated that perceived parental acceptance-rejection predicts the irregularities in the emotions and behaviors of children while the nurturing attitudes of mothers mediate this leading relationship (Halime, 2023). Another recent study indicated that automated fallacious thoughts mediate the leading association between parental warmth and non-objective well-being (Özbiler et al., 2023). Many researches were conducted on children and adolescents, but the question remains how parental acceptance-rejection, negative core beliefs, and cognitive distortion could be observed in young adults, as this phenomenon has not received enough attention.

Khaleque and Rohner (2011) stated that parental rejection can lead to violent tendencies in an adult, which further leads to prejudiced thoughts. Similarly, has been seen that parental acceptance has a strong impact on the child's psychological adjustment. The study also pinpointed the development of negative beliefs due to parental rejection. The negative belief developed in response to perceived parental rejection mediates the association between psychological maladjustment (cognitive distortion) and parental rejection. Consequently, children having stronger negative core beliefs demonstrate more cognitive distortions (Rohner et al., 2005). Kim and Cicchetti (2010) studied the association between child maltreatment, psychopathology, peer relations, and emotion regulation, and focused on the mediating

role of negative self-schemas. The study continued for over three years and included 349 children (aged 7 to 12) and the result showed that the negative self-schemas are more likely to develop in children with higher parental mistreatment; these negative self-beliefs lead to cognitive distortion. The study found that the key factor in the development of cognitive distortion is the formation of negative core beliefs as a result of parental rejection. The impact of parental rejection on cognition is also explained by (Starr & Davila, 2008). They evaluated the association between parental rejection and psychological issues including depression and anxiety. The results showed that adolescents perceiving higher levels of parental rejection were more vulnerable to developing negative core beliefs, eventually leading to the development of cognitive distortions. These cognitive distortions contribute to depression and anxiety. Through one study, it was found that Maternal rejecting attitudes in female adolescents were linked to increased negative autonomic thoughts and decreased self-esteem, while in male adolescents; they were linked to low self-esteem but not depressive symptoms. However, maternal rejecting attitudes majorly influenced female adolescents as compared to male adolescents (Park et al., 2016). Similarly, a quantitative study was conducted to determine the effect of parental acceptance-rejection, power, and prestige on the individuals' psychological adjustment and found gender differences in perceived parental power, with men valuing fathers more than women, and parental prestige moderated the relationship between perceived paternal acceptance and women's psychological adjustment (Machado et al., 2014). Likewise, another study found that negative core beliefs significantly mediate the relationship between childhood maltreatment and adult cognitive distortions, highlighting the enduring impact of childhood experiences on adult cognitive processes (Kaysen et al., 2005). Moreover, according to researchers very few researchers have explored the specific distortion closely related to mother and father rejection.

Despite many studies on parental rejection in Pakistan, there is no study, according to our understanding, which has explored the mediating role of negative core beliefs in parental acceptance-rejection and cognitive distortion among young adults. There is a need for research to disentangle the phenomenon of cognitive distortion associated with parental acceptance-rejection as a mediating role of negative core beliefs among young adults in the collectivist culture of Pakistan. Particularly, theoretical and empirical research is required to understand various cultural-related critical aspects. For instance, we have found a scarcity of literature investigating the interplay between parental acceptance-rejection, negative core beliefs, and cognitive distortions in Asian countries. Additionally, most of the research did not focus on the different types and severity of parental acceptance-rejection, and its long-term effect in young adults' lives i.e. how the adult life is affected by the parental acceptance-rejection which leads to negative core beliefs and cognitive distortions. Another key gap suggests that the previous research do not relate the negative core beliefs with specific types of cognitive distortions as dozens of cognitive distortions are explained in literature.

### **Rationale**

Parental acceptance rejection leads to enduring negative core beliefs and the later stage of adult causes cognitive distortions. The experience of rejection by an attachment figure is likely to induce feelings of anxiety and insecurity as well as to become associated with cognitive distortions. Perceived parental warmth and acceptance, on the other hand, is associated worldwide with psychological adjustment, positive personality, and behavioral development (Khaleque & Rohner, 2002). Research has shown that the establishment of negative core beliefs resulting from parental rejection can cause violent inclinations, prejudiced thought patterns, and psychological maladjustment (Khaleque and Rohner, 2011; Rohner et al., 2005). Subsequent studies, such as those conducted by Kaysen et al. (2005) and Kim and Cicchetti (2010), have demonstrated that the association between maltreatment during childhood and cognitive distortions in adulthood is substantially mediated by these unfavorable core beliefs. Consequently,

children having stronger negative core beliefs demonstrate more cognitive distortions (Rohner et al., 2005). These findings underscore the long-term influence of early parenting practices on subsequent thought patterns. Despite the growing recognition of the far-reaching consequences of parental acceptance-rejection, there is a significant literature gap in parental acceptance-rejection with specific types of cognitive distortion therefore; this study will focus on associating parental acceptance-rejection with certain types of cognitive distortion among young adults. According to the researcher, Pakistani literature also does not provide any study on the mediating role of negative core beliefs in parental acceptance-rejection and cognitive distortion among young adults.

## Research Methodology

### Study Design

It was a quantitative cross-sectional study. This research design was chosen to explore the interplay between parental acceptance rejection, negative core beliefs, and cognitive distortion in young adults.

### Sample

The initial sample of 400 young adults, aged between 18 and 25 years, was recruited using a convenient sampling technique from various academic institutes in Gujranwala, Gujrat, and Lahore. During the initial screening, data from 75 participants were excluded due to non-serious behavior, lack of performance or interest, outlier responses, and poor data quality. This resulted in a final sample of 325 participants for analysis, comprising 120 males ( $M = 22.3$ ,  $SD = 1.4$ ) and 205 females ( $M = 21.5$ ,  $SD = 1.3$ ).

### Measurements

#### Parental Acceptance-Rejection Questionnaire (PARQ)

Khaleque and Rohner (2005) developed the Parental Acceptance-Rejection Questionnaire (PARQ), a self-report questionnaire designed to assess adults' current perception and retrospective remembrances of the degree to which they experienced parental (maternal and paternal) acceptance or rejection in childhood, in simple terms want respondents to reflect onto an earlier time in childhood with parents. The measure consists of four scales: (1) warmth and affection (or coldness and lack of affection, when reverse scored), (2) hostility and aggression, (3) indifference and neglect, and (4) undifferentiated rejection. Participants responded to two versions of the short form which assesses remembrances of maternal (Adult PARQ: Mother) and paternal (Adult PARQ: Father) acceptance-rejection in childhood, respectively. Both are 24-item self-report, 4-point Likert Scale questionnaires that include identical items keyed as appropriate for mothers and fathers. The minimum score on the scale is 24 and the maximum score is 96. Father form rejection subscales items include: rejection (5,8,16 and 21), warmth (1,3,9,12,17,19,22 and 24), hostility (4,6 10,14,18, and 20), and negligence (2,7,11,13,15 and 23). Whereas mother forms subscales items include: rejection (5,8,16 and 21), warmth (1,3,9,12,17,19,22 and 24), hostility (4,6 10,14,18 and 20), and negligence (2,7,11,13,15 and 23). The total score PAR is divided into ranges that show parental acceptance and rejection as a lower score is devoted to parental acceptance and a higher score denotes parental rejection. The Cronbach alpha of PARQ ranged from .86 to .95. Cronbach's alpha for the Father PARQ is 0.91 and 0.90 is for the Mother PARQ.

#### Negative Core Beliefs Scale (NCBI)

Osmo et al. (2018) developed the Negative Core Beliefs Scale (NCBI) to assess negative core beliefs. NCBI contains 32 items and each item is scored on a 4-point Likert scale, ranging from 1 (i.e., "Does not describe me well") to 4 (i.e., "Describes me very well"). 21 items are for the negative core beliefs about self (NCB-

S) dimension, meaning perception about self. It has further subscales including Inferiority (1-4 items), Vulnerability (5-10), Unlovability (11-15), and Worthlessness (16-21) remaining 10 items focusing on negative core about others, meaning perception about others. The remaining 11 items are for the negative core beliefs about others (NCB-O) dimension. The Cronbach alpha coefficient value is above .84.

### **Cognitive Distortion Scale (CDS)**

Covin et al. (2011) developed the Cognitive Distortion Scale (CDS), a 20-item self-report scale instrument developed to measure 10 cognitive distortions (*mindreading, catastrophizing, all-or-nothing thinking, emotional reasoning, labeling, mental filter, overgeneralization, personalization, should statements, minimizing the positive*) using a 7-point scale (1 = never, 7 = all the time). Each cognitive distortion has been rated in two domains: interpersonal (IP) and personal achievement (PA). The Cronbach alpha of CDS is .85, indicating high reliability.

### **Ethical Considerations**

This study was conducted after approval of the institutional ethical review committee, which ensured all APA ethical standards were followed during the planning, data collection, and reporting of results.

### **Statistical Analysis**

Data analysis was performed using SPSS 27 and JASP software packages. Initial analyses, including descriptive statistics, correlation, and regression analyses, were conducted with SPSS 27. Furthermore, a mediation model was tested using JASP through the Hayes Process Macro method, assuming negative core beliefs mediate the relationship between parental acceptance/rejection and cognitive distortions.

### **Procedure**

The institutional permission was obtained from various academic institutes of Gujranwala and Gujrat before data collection. Participants, comprising students from different departments, were then approached and informed consent was through convenience sampling. Data was collected through Google Forms and in hard form. Participants were asked to fill out a Demographic Information Sheet and then requested to fill out a Parental Acceptance Rejection Scale for Adults (PARQ), Negative Core Belief Inventory (NCBI), and Cognitive Distortions Scale (CDI). A SPSS data file was created, and data screening was completed for the main analysis of the study.

### **Results**

Before hypothesis testing all study measures' psychometric properties and normality of data were evaluated. PARQ, NCBI, and CDS and their subdomain showed an acceptable range ( $>.05$ ) to an excellent level ( $>.90$ ) of internal consistency with adequate normal distribution of data (See Supplement Table Material). After the satisfactory level of reliability, further analyses for hypotheses testing were conducted.

#### **Hypothesis 1**

- There will be a significant interrelationship between parental acceptance-rejection, negative core beliefs, and cognitive distortions.



**Table 1***Pearson Product Moment Correlation between PARQ, NCBI, and CDS (N=325)*

Variable	1	2	3
PAR	-	.45**	.43**
NCBI		-	.64**
CDS			-

*Note.* PAR=Parental Acceptance-Rejection Questionnaire, NCBI=Negative Core Belief Inventory, CDS=Cognitive Distortion Scale, \*\* $p < .01$ .

Table 1 indicates the correlation between PAR, NCBI, and CDS. The correlation between PAR and NCBI was the most significant one with a medium size and positive direction ( $r = 0.45$ , \*\* $p < 0.01$ ). Furthermore, the correlation between PAR and CDS was also the most significant one with a medium size and positive direction ( $r = 0.43$ , \*\* $p < 0.01$ ). PAR, NCBI, and CBS all subscales were also significantly associated.

**Hypothesis 2**

- Negative core beliefs and cognitive distortions will be strong predictors of perceived parental acceptance-rejection.

**Table 2***Hierarchical Regression Analysis for Exploring Negative Core Beliefs and Cognitive Distortion as Predictors of Parental Acceptance-Rejection (N=325)*

Variable	<i>B</i>	95% CI		<i>SEB</i>	<i>β</i>	<i>R</i> <sup>2</sup>	<i>ΔR</i> <sup>2</sup>
		<i>UL</i>	<i>LL</i>				
Step 1							
(Constant)	94.74	83.45	106.02	5.73		0.20	0.20
NCBI	0.64	0.50	0.77	0.07	0.45		
Step 2							
(Constant)	85.22	73.14	97.30	6.14		0.24	0.23
NCBI	0.51	0.36	0.66	0.07	0.36		
MR	2.36	1.15	3.57	0.61	0.20		
Step 3							
(Constant)	82.03	69.86	94.20	6.18		0.25	0.01
NCBI	0.43	0.28	0.59	0.08	0.31		
MR	1.86	0.62	3.11	0.63	0.16		
SS	1.62	0.47	2.77	0.58	0.15		

*Note.* NCBI=Negative Core beliefs Inventory, MR= Mind Reading, SS= Should Statements,  $\beta$ =Standardized coefficient of regression, SEB= Standard Error of Beta, CI= Confidence Intervals LL= Lower limit, UL= Upper limit.

Table 2 represents the predictive association of Negative Core Beliefs (NCBI), Mind Reading (MR), and Should Statements (SS), sub-domains of cognitive distortions (CDS), with Parental Acceptance-Rejection (PAR), analyzed in three steps. In Step 1, NCBI emerged as the strongest predictor, showing a medium significant association with PAR ( $\beta = 0.45$ ,  $*p < .05$ ) and accounting for 20% of the variance in PAR. In Step 2, both NCBI ( $\beta = 0.36$ ,  $*p < .05$ ) and MR ( $\beta = 0.20$ ,  $*p < .05$ ) were significant predictors, collectively explaining 24% of the variance, with MR identified as the second strongest predictor. In Step 3, NCBI ( $\beta = 0.31$ ,  $*p < .05$ ), MR ( $\beta = 0.16$ ,  $*p < .05$ ), and SS ( $\beta = 0.15$ ,  $*p < .05$ ) together predicted 25% of the variance in PAR. While NCBI retained a medium significant association, both MR and SS demonstrated small significant associations with PAR. Overall, these findings suggest that negative core beliefs, mind reading and should statements are significant predictors of parental acceptance-rejections.

### Hypothesis 3

- The negative core beliefs will play a role as a mediator between parental acceptance and mind-reading cognitive distortion.

**Table 3**

*Negative Core Belief as a Mediator in Parental Acceptance Rejection and Mind Reading (N=325)*

			95% C I					
Variable			<i>Est</i>	<i>S.E</i>	<i>z-value</i>	<i>P</i>	<i>CL</i>	<i>CU</i>
NCBI	→	MR b	0.34	0.05	6.24	.001	0.23	0.49
PAR	→	MR c'	0.007	0.002	3.85	.001	0.004	0.01
PAR	→	NCBI a	0.01	0.002	9.16	.001	0.01	0.01

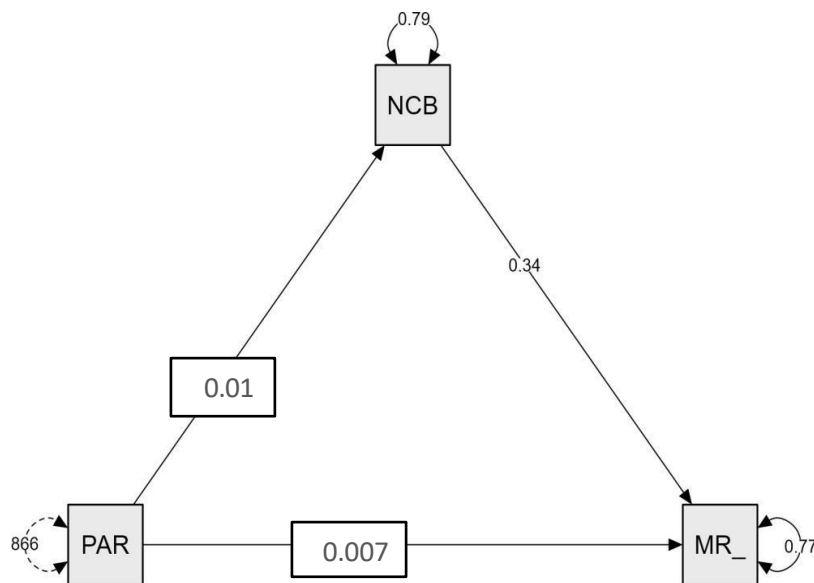
Note. PAR =Parental acceptance-rejection, NCBI=Negative core beliefs, MR= Mind Reading, \*\*\*  $p < .001$ .

Table 3 shows the mediating role of NCBI between PAR and MR (sub-domain of CDS). The results showed that NCBI was a significant partial mediator between PAR and MR ( $Est = 0.34$ ,  $S.E = 0.05$ ,  $***p < .001$ ) explaining their relationship. Despite the mediating role of NCBI, PAR has a direct effect on MR ( $Est = 0.007$ ,  $S.E = 0.002$ ,  $***p < .001$ ). The direct, indirect, and total effect path diagram is displayed in Figure 1.



**Figure 1**

*Mediation Model Summary: Examining the Mediating Role of Overall Negative Core Beliefs (M) in the Relationship between Parental Acceptance-Rejection(X) and Mind Reading*



*Note.* The figure illustrates the direct and indirect effects of Parental Acceptance-Rejection (PAR) on Mind Reading (MR). Specifically, PAR had a direct effect on MR ( $c' = 0.01$ ). Furthermore, PAR indirectly influences MR through overall Negative Core Beliefs (NCBI) as a partial mediator. The indirect effect was comprised of two paths: the effect of PAR on NCBI ( $a = 0.01$ ) and the effect of NCBI on MR ( $b = 0.34$ ). The total effect of PAR on MR was calculated using the formula  $c = c' + a(b)$ , yielding a total effect of  $c = 0.01 + 0.01(0.34) = 0.0134$ .

#### Hypothesis 4

- Negative self-core beliefs are expected to more likely play a mediating role in the association between parental rejection and mind-reading cognitive distortion than negative core beliefs about others.

**Table 4**

*Mediating Roles of Negative Core Belief about Self and Other in Parental Acceptance- Rejection and Mind Reading (N=325)*

						95% C I	
Variables		<i>Est</i>	<i>S. E</i>	<i>z-value</i>	<i>P</i>	<i>CL</i>	<i>CU</i>
NCBI-S	→ MR b	0.36	0.05	6.19	.001	0.25	0.48
NCBI-O	→ MR b	-0.01	0.05	-0.21	.828	-0.12	0.10
PAR	→ MR $c'$	0.007	0.002	4.01	.001	0.004	0.01
PAR	→ NCBI-S a	0.01	0.002	8.24	.001	0.01	0.01
PAR	→ NCBI_O a	0.01	0.002	7.37	.001	0.009	0.01

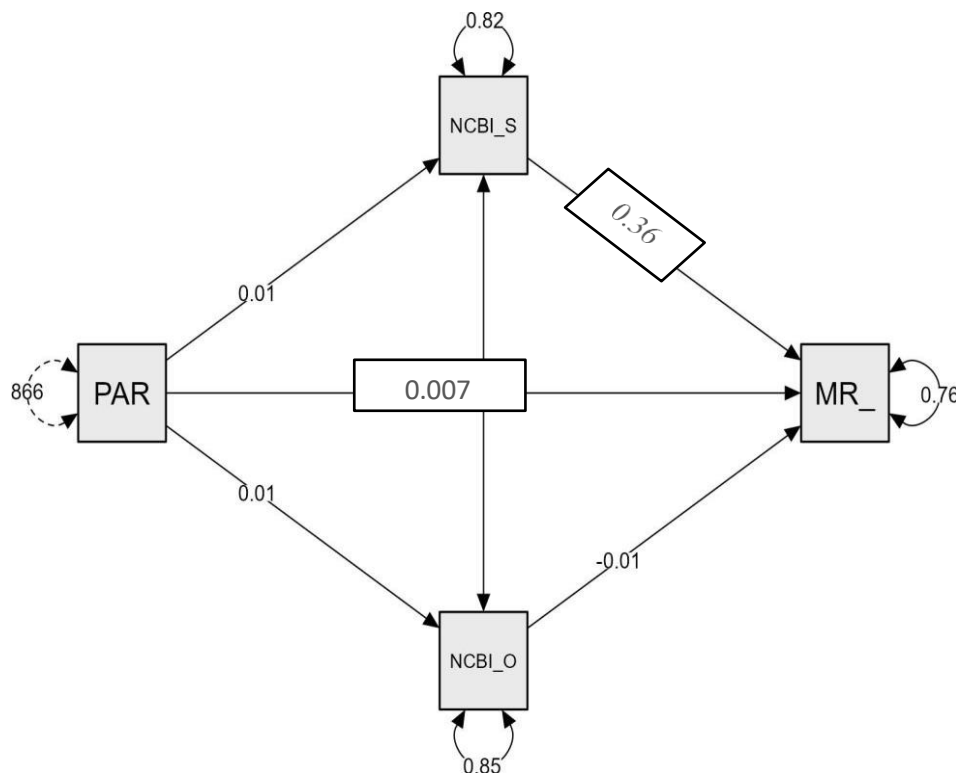
*Note.* PAR=Parental Acceptance Rejection, NCBI-S=Negative Core Beliefs about self, NCBI-O=Negative Core Beliefs about others, MR= Mind Reading. \*  $p < .05$ ,

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

Table 4 presents negative core beliefs about self (NCBI-S) and negative core beliefs about others (NCBI-O) as mediators between Parental Acceptance-Rejection (PAR) and Mind Reading (MR), a sub-factor of CBS. The results indicate that NCBI-S significantly partially mediates the relationship between PAR and MR (Est. = 0.36, S.E = 0.05, \*\*\* $p < .001$ ) through Path b. In contrast, NCBI-O was found to be a non-significant mediator (Est = -0.01, S.E = 0.05,  $p > 0.05$ ), showing no mediation effect. Additionally, PAR has a significant direct effect on MR (Est = 0.007, S.E = 0.002, \*\*\* $p < .001$ ), as illustrated in Figure 2. Whereas, NCBI-O did not exhibit a significant indirect effect (Est. = -0.01, S.E = 0.05,  $p = .82$ ) in the association between PAR and MR. However, NCBI-O had a significant direct effect on MR (Est = 0.01, S.E = 0.002, \*\*\* $p < .001$ ), as illustrated by the path diagram in Figure 2.

**Figure 2**

*Summary of the Mediation Model: The Relationship between Parental Acceptance Rejection(X) and Negative Core Beliefs About Self and Others (M) and Mind Reading(Y)*



*Note.* The figure shows the direct and indirect effects of Parental Acceptance-Rejection (PAR) on Mind Reading (MR). PAR had a significant direct effect on MR ( $c' = 0.007$ ) in the presence of NCB-S and NCB-O. The indirect effect of PAR was confirmed only through NCB-S, as described by path  $a = 0.01$  (PAR to NCB-S) and path  $b = 0.36$  (NCB-S to MR), underscoring the partial mediating role of NCB-S. The total effect of PAR on MR via NCB-S is calculated as  $c = c' + a(b) = 0.007 + 0.01(0.36) = 0.0106$ . Similarly, PAR has an indirect effect on MR through NCB-O, with PAR's effect on NCB-O ( $a = 0.01$ ) and NCB-O's non-significant effect on MR ( $b = -0.01$ ). The total effect of PAR on MR via NCB-O was calculated as  $c = c' + a(b) = 0.007 + 0.01(-0.01) = 0.0069$ .

#### Hypothesis 5

- Negative core beliefs will serve as a mediate between parental rejection and the cognitive distortion of should statements.

**Table 5**

*Negative Core Belief as a Mediator in Parental Acceptance Rejection and Should Statement (N=325)*

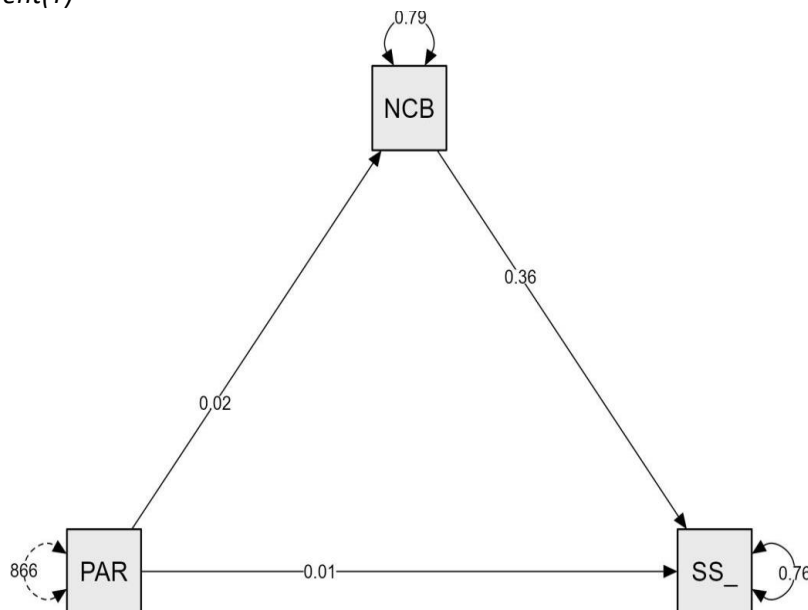
Variable		<i>Est</i>	<i>S. E</i>	<i>z-value</i>	<i>P</i>	95% CI	
						<i>CL</i>	<i>CU</i>
NCBI	→ SS b	0.35	0.054	6.58	.001	0.25	0.46
PAR	→ SS c'	0.02	0.002	3.73	.001	0.003	0.01
PAR	→ NCBI a	0.01	0.002	9.16	.001	0.01	0.01

Note. PAR= Parental Acceptance-rejection, NCBI = Negative Core beliefs, SS= Should Statement, \*\*\* p<.001.

Table 5 displays the mediating role of negative core beliefs (NCBI) between parental acceptance-rejection (PAR) and Should Statements (SS). The results show that PAR had a significant direct effect on SS ( $Est = 0.02$ ,  $S.E = 0.002$ ,  $p < .001$ ). Furthermore, NCBI was computed as a significant partial mediator between PAR and SS ( $Est = 0.35$ ,  $S.E = 0.054$ ,  $p < .001$ ), as PAR had a significant indirect effect on NCBI ( $Est = 0.01$ ,  $S.E = 0.002$ ,  $p < .001$ ). The direct, indirect, and total effects are illustrated in the path diagram in Figure 8.

**Figure 3**

*Model Summary Between Parental Acceptance Rejection(X) and Negative Core Beliefs(M) and Should Statement(Y)*



Note. This model aligns with a hypothesized relationship that demonstrated that Parental Acceptance-Rejection (PAR) directly influences Should Statements (SS) ( $c' = 0.01$ ). Additionally, PAR has an indirect effect on SS through NCB as a mediator, with PAR's effect on NCB ( $a = 0.02$ ) and NCB's effect on SS ( $b = 0.36$ ). The total effect of PAR on SS was calculated as  $c = c' + a(b) = 0.01 + 0.02(0.36) = 0.0172$ .

### Hypothesis 6

- Parental rejection and should statements cognitive distortion would be more strongly mediated by negative core belief about self than negative core belief about others.

**Table 6**

*Negative Core Belief about Self and Other as Mediators in Parental Acceptance Rejection and Should Statement (N=325)*

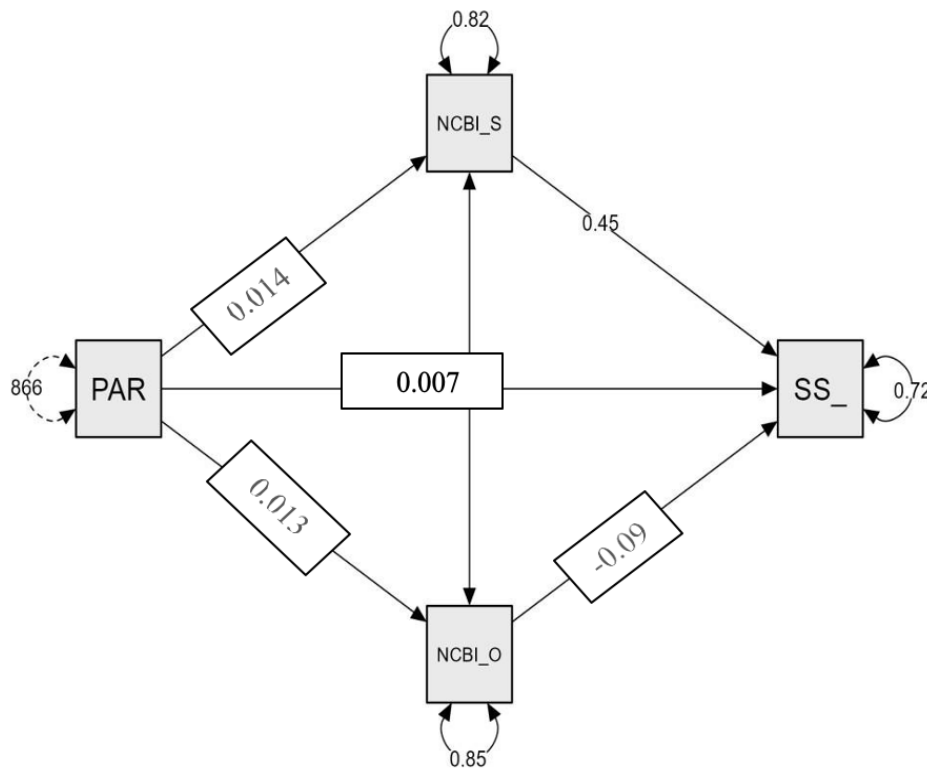
							95% C I	
Variable			<i>Est</i>	<i>S. E</i>	<i>z-value</i>	<i>P</i>	<i>CL</i>	<i>CU</i>
NCBI_S	→	SS b	0.45	0.05	7.78	.001	0.33	0.56
NCBI_O	→	SS b	-0.09	0.05	-1.68	.09	-0.20	0.01
PAR	→	SS c'	0.007	0.002	4.03	.001	0.004	0.01
PAR	→	NCBI_S a	0.014	0.002	8.24	.001	0.01	0.01
PAR	→	NCBI_O a	0.013	0.002	7.37	.001	0.009	0.01

Note. PAR=Parental Acceptance Rejection, NCBI-S=Negative Core Beliefs about Self, NCBI-O=Negative Core Beliefs about Others, SS= Should Statement Indicates, \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Table 6 presents the mediating roles of NCBI-S and NCBI-O in the relationship between Parental Acceptance-Rejection (PAR) and Should Statements (SS), a sub-domain of CDS. The results reveal that NCBI-S was a significant partial mediator (Est. = 0.45, S.E = 0.05,  $p < .001$ ), accounting relationship between PAR and SS. In contrast, NCBI-O was found to be a non-significant mediator (Est = -0.09, S.E = 0.05,  $p > 0.05$ ). PAR had a weak but highly significant direct effect on SS (Est. = 0.007, S.E = 0.002,  $p < .001$ ), as depicted in the path diagram in Figure 12.

**Figure 4**

*Mediation Model Summary: Parental Acceptance Rejection(X) and Negative Core Beliefs About Self and Other (M) and Should Statement (Y)*



Note. The figure displays that PAR had a direct effect on SS ( $c'=0.007$ ) and an indirect effect ( $a=0.014$ ) through NCBI-S with a total effect calculated by a formula  $c=c'+a$  ( $b$ ) =  $0.007+(0.014 \times 0.45)$  = 0.013. In contrast, PAR's indirect effect on NCBI-O ( $a=0.013$ ) was non-significant, resulting in a total effect of  $c= 0.005$ . This reflects the strong mediating role of NCBI-S compared to NCBI-O.

#### Hypothesis 7

- The association between maternal and paternal acceptance-rejection and cognitive distortion would be mediated by overall negative core beliefs.

**Table 7**

*Negative Core Belief as a Mediator in Mother & Father Acceptance Rejection and Mind Reading (N=325)*

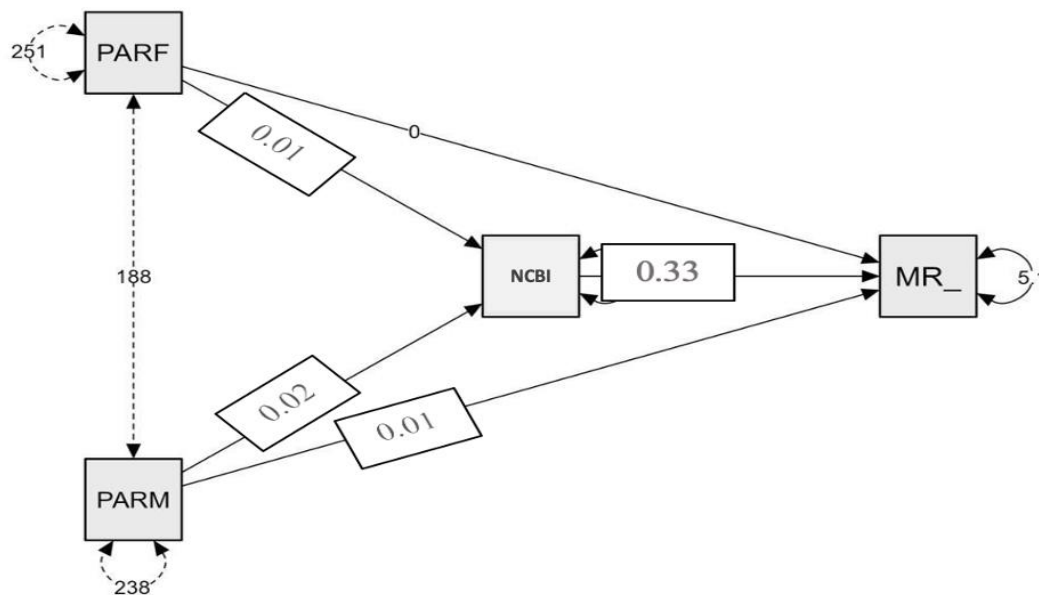
			95% CI					
Variable			Est	S. E	z-value	P	CL	CU
NCBI	→	MR b	0.33	0.05	6.17	.001	0.23	0.44
PARM	→	MR c'	0.01	0.005	2.63	0.009	0.003	0.02
PARF	→	MR c'	0.001	0.005	0.28	0.78	0.008	0.01
PARM	→	NCBI a	0.02	0.005	4.08	.001	0.01	0.03
PARF	→	NCBI a	0.01	0.005	2.15	0.03	9.66	0.02

Note. PARM= Mother Acceptance-rejection, PARF=Father Acceptance rejection), NCBI =Negative core beliefs, MR= Mind Reading, \* $p<.05$ , \*\*  $p<.01$  and \*\*\*  $p<.001$

Table 7 shows the mediating role of NCBI between Parental Acceptance Rejection by Father PARF and mother (PARM) (as separate independent variables) and MR (sub-domain of CDS). It reveals that NCBI was a significant mediator between PAR (both mother and father independently) and MR ( $Est. =0.33$ ,  $S.E =0.05$ ,  $p< .001$ ) explaining their relationship. NCBI was identified as a partial mediator between PARM and MR and a full mediator between PARF and MR as PARM had a direct effect on MR ( $Est =0.01$ ,  $S. E =0.005$ ,  $p< .001$ ) while PARF had no direct effect on MR ( $Est. =- 0.001$ ,  $S. E =0.005$ ,  $p=0.78$ ), but its indirect path computed significant. The path diagram has been presented in Figure 5.

**Figure 5**

Model Summary between Mother Acceptance Rejection (X1), Father Acceptance Rejection (X2), Mediating by Negative Core Beliefs on Mind Reading (Y)



Note. The figure shows that Parental Acceptance-Rejection by Mother (PARM), both had a direct effect on Mind Reading (MR) ( $c' = 0.01$ ) and an indirect effect through NCBI as a mediator, with PARM's effect on NCBI ( $a = 0.02$ ) and NCBI's effect on MR ( $b = 0.33$ ). The total effect of PARM on MR was calculated as  $c = 0.016$ . Conversely, Parental Acceptance-Rejection by the father (PARF) had a non-significant direct effect on MR ( $c' = 0.001$ ) but an indirect effect through NCBI as a mediator was notable as PARF's effect on NCBI ( $a = 0.01$ ) and NCBI's effect on MR ( $b = 0.33$ ). The total effect of PARF on MR was calculated as  $c = 0.0043$  emphasizing the role of NCBI in mediating the effect of PARF on MR.

### Hypothesis 8

- Overall Negative Core beliefs will play a strong mediating role between maternal and paternal rejection and should statements cognitive distortion.

**Table 8**

Negative Core Belief as a Mediator in Mother and Father Acceptance Rejection and Should Statements ( $N=325$ )

							95% C I	
Variables			Est	S. E	z-value	P	CL	CU
NCBI	→	SS b	.34	.054	6.48	.001	0.24	0.45
PARM	→	SS $c'$	.02	.005	4.31	.001	0.01	0.03
PARF	→	SS $c'$	-.007	.005	-1.45	.14	-0.01	0.002
PARM	→	NCBI a	.02	.005	4.08	.001	0.01	0.03
PARF	→	NCBI a	.01	.005	2.15	.03	9.6	0.02

Note. Parental Acceptance Rejection-Mother form =PARM, Parental Acceptance Rejection-Father form=PARF, Negative core beliefs=NCBI, SS= Should Statements, \* $p < .05$ , \*\*  $p < .01$ , \*\*\* and  $p < .001$ .

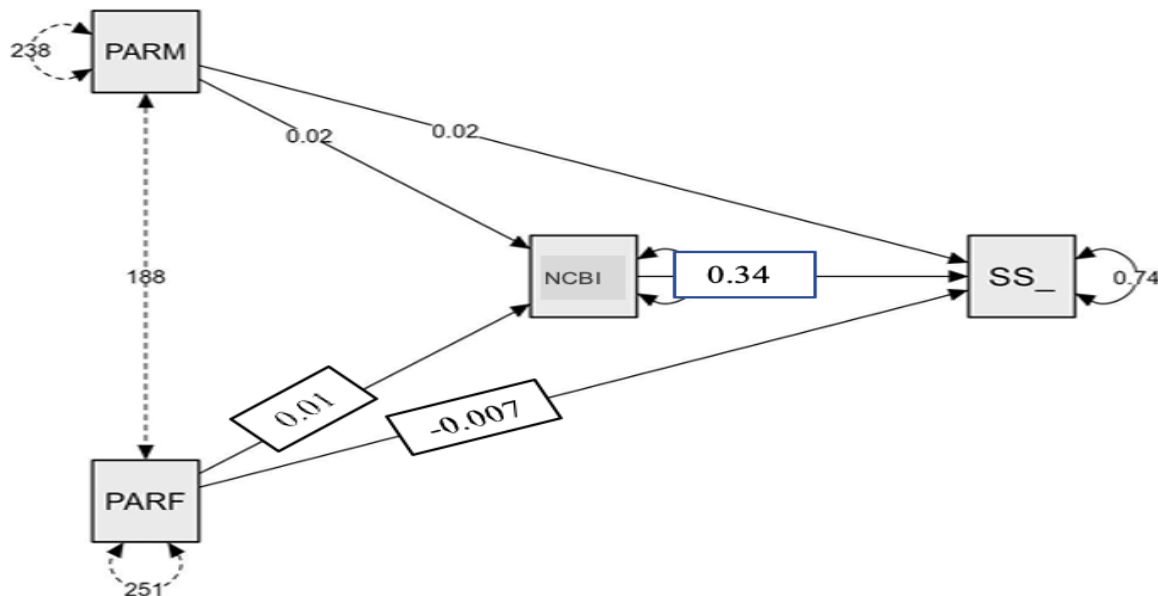
Table 8 depicts the mediating role of NCBI between Parental Acceptance-Rejection (mother form: PARM and father form: PARF) as independent variables and Should Statements (SS), a sub-domain of CDS. The



results indicate that NCBI serves as a significant mediator between both PARM and PARF and SS (Est = 0.34, S.E = 0.054,  $p < .001$ ), explaining their relationship via Path b. PARM has a significant direct effect on SS (Est = 0.02, S.E = 0.005,  $p < .001$ ), whereas PARF has a non-significant direct effect on SS (Est = -0.007, S.E = 0.005,  $p > 0.05$ ). Thus, NCBI plays a partial mediating role between PARM and SS, and a full mediating role between PARF and SS. Additional details are illustrated in Figure 6.

**Figure 6**

*Meditation Model Summary between Mother and Father Acceptance Rejection(X) and Overall Negative Core Beliefs (M) and Should Statement (Y)*



*Note.* The figure shows that Parental Acceptance-Rejection by Mother (PARM) had a significant direct effect on Should Statements (SS) ( $c' = 0.02$ ) and an indirect effect through NCBI as a mediator. PARM's effect on NCBI ( $a = 0.02$ ) and NCBI effect SS ( $b = 0.34$ ). The total effect of PARM on SS was calculated as  $c = 0.026$ . The significant direct and indirect effect suggests that NCBI partially mediates this relationship. On the other hand, Parental Acceptance-Rejection by father (PARF) direct effects ( $c' = -0.007$ ) on SS were non-significant. However indirect effects of SS through NCBI, with the path from PARF to NCBI ( $a = 0.01$ ) and from NCBI to SS ( $b = 0.34$ ) were significant. The absence of a direct effect of PARF on SS underscores the full mediating role of NCBI in this relationship.

### Hypothesis 10

- Mother and father acceptance-rejection and mind reading cognitive distortion will be mediated by overall negative core beliefs about self.

**Table 9**

*Negative Core Beliefs about Self as a Mediator in Mother & Father Acceptance Rejection and Mind Reading (N= 325)*

							95% CI	
Variables			Est	S. E	z-value	P	CL	CU
NCBI-S	→	MR b	0.35	0.05	6.72	< .001	0.25	0.46
PARF	→	MR c'	0.002	0.005	0.45	0.65	-0.007	0.01
PARM	→	MR c'	0.01	0.005	2.54	0.01	0.003	0.02
PARF	→	NCBI-S a	0.008	0.005	1.54	0.12	-0.002	0.01

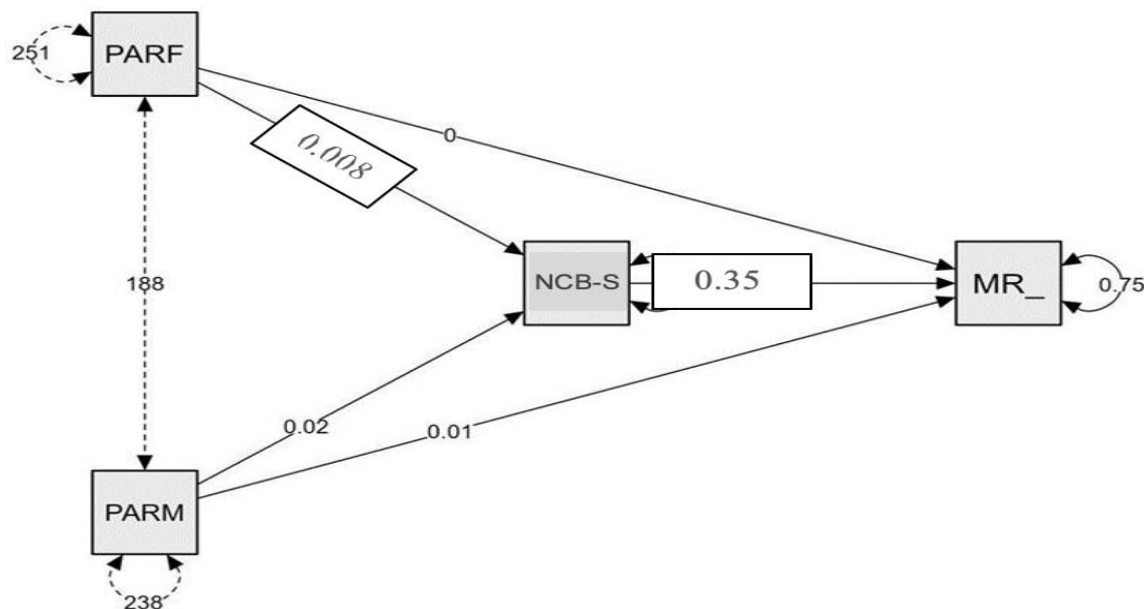
PARM	→	NCBI-S a	0.02	0.005	4.08	< .001	0.01	0.03
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Note. PARM= Mother Acceptance rejection, PARF= Father Acceptance Rejection, NCBI-S Negative core beliefs about self, MR= Mind Reading \* $p < .05$ , \*\*  $p < .01$ , \*\*\* $p < .001$ .

Table 9 illustrates the mediating role of NCBI-S between Parental Acceptance-Rejection (father-form: PARF and mother-form: PARM) as independent variables and Mind Reading (MR), a sub-domain of CDS. The results indicate that NCBI-S was a partial mediator between PARM and MR and a full mediator between PARF and MR. The NCBI-S partial mediation explained with PARM significant effect ( $Est = 0.35$ ,  $S.E = 0.05$ , \*\*\* $p < .001$ ) on MR because the direct effect of PARM was also significant ( $Est = 0.01$ ,  $S.E = 0.005$ , \*\*\* $p < .001$ ). As opposed to PARM's significant direct effect, PARF did not have a noticeable direct effect ( $Est = 0.002$ ,  $S.E = 0.005$ ,  $p = 0.65$ ), while the indirect path calculated rigorously through NCBI-S, which indicates NCBI-S full mediation between this association. The path diagram of the dual mediating role is present in Figure 7.

**Figure 7**

Summary Between Parental Acceptance Rejection Mother & Father (X) and Negative Core Beliefs About Self (M) and Mind Reading (Y)



Note. The model shows that PARM has a direct effect on MR ( $c' = 0.01$ ) and an indirect effect through NCBI-S as a mediator, with PARM's effect on NCBI-S ( $a = 0.02$ ) and NCBI-S's effect on MR ( $b = 0.35$ ). The total effect of PARM on MR is  $c = 0.01 + 0.02(0.35) = 0.017$ . PARF has a non-significant direct effect on MR ( $c' = 0.002$ ), and its indirect effect through NCBI-S was also significant ( $a = 0.008$ ), resulting in a minimal total effect.

### Hypothesis 11

- Negative core beliefs about self would mediate between mother and father rejection and should statement cognitive distortion.

Table 10 provides the mediation analysis result wherein NCBI-S is taken as a mediator between Parental Acceptance-Rejection (father-form: PARF and mother-form: PARM) as independent variables and Should Statements (SS). The results show that NCBI-S is a significant partial mediator between PARF and PARM and SS ( $Est = 0.39$ ,  $S.E = 0.02$ ,  $p < .001$ ). PARM has a weak but significant direct effect

on SS (Est = 0.02, S.E = 0.005,  $p < .001$ ), while PARF has a non-significant direct effect on SS (Est = -0.006, S.E = 0.005,  $p > 0.05$ ). Additionally, PARF has no significant effect on NCBI-S, indicating no predictive association with SS. The path diagram shows the direct, indirect, and total effects in Figure 8.

**Table 10**

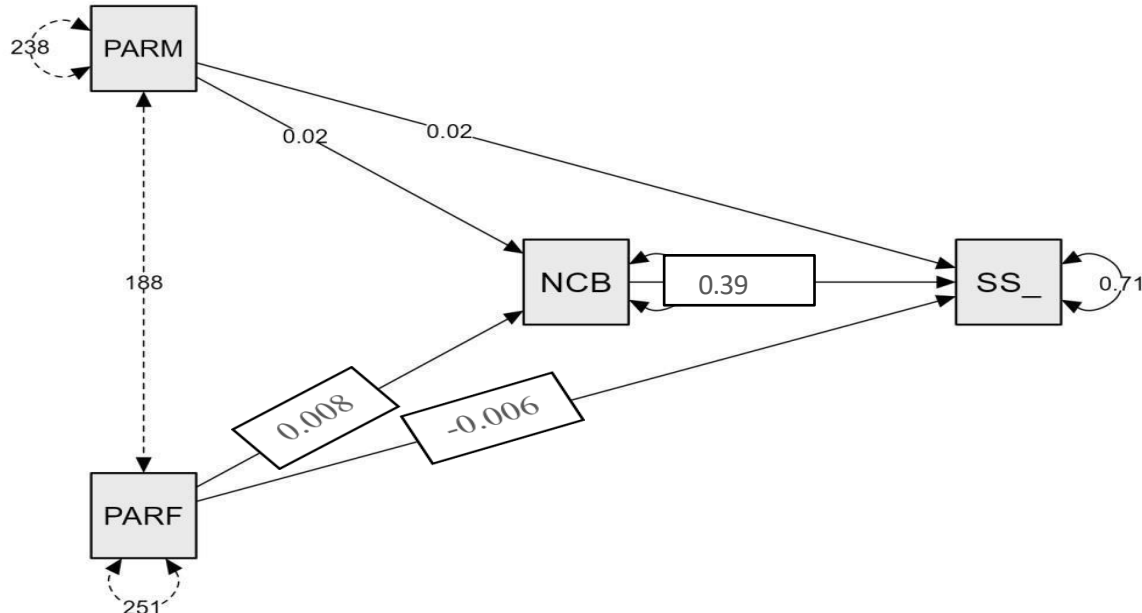
*Negative Core Belief About Self as a Mediator in Mother & Father Acceptance Rejection and Should Statement (N=325)*

Variables			Est	S. E	z-value	p	95 % CI	
							CL	CU
NCBI_S	→	SS b	0.39	0.02	7.68	.001	0.29	0.49
PARM	→	SS c'	0.02	0.005	4.18	.001	0.01	0.03
PARF	→	SS c'	-0.006	0.005	-1.35	.177	-0.01	0.003
PARM	→	NCBI_S a	0.02	0.005	4.01	.001	0.01	0.03
PARF	→	NCBI_S a	0.008	0.005	1.54	.123	-0.002	0.01

*Note.* PARM=Mother Acceptance Rejection, PARF=Father Acceptance rejection, NCBI-S=Negative core beliefs about Self, SS= Should Statement Indicates\*\*\*  $p < .001$ .

**Figure 8**

*Summary between Mother and Father Acceptance Rejection (X) and Negative Core Beliefs About Self and Should Statement (Y)*



*Note.* The figure shows that PARM had a direct effect on SS ( $c' = 0.02$ ) and an indirect effect on SS through NCBI-S as a mediator, with PARM's effect on NCBI-S ( $a = 0.02$ ) and NCBI-S's effect on SS ( $b = 0.39$ ). The total effect of PARM on SS was calculated as  $c = c' + a(b) = 0.02 + 0.02(0.39) = 0.0278$ . The results also indicated that PARF had a non-significant direct effect on SS ( $c' = -0.006$ ), and the indirect effect of PARF on SS through NCBI-S was also non-significant ( $a = 0.008$ ,  $p > 0.05$ ).

## Discussion

The current study provides a thorough evaluation of the complex structure of associations among parental acceptance and rejection, negative core beliefs, and cognitive distortions. The findings suggest that early perceptions of parenting style have a major impact on how children grow emotionally and cognitively as adults. Parental acceptance-rejection showed a significant correlation with both negative core beliefs and cognitive distortions. Negative core beliefs act as a mediator between parental acceptance-rejection and cognitive distortions. Negative core beliefs significantly mediate the association between parental acceptance-rejection and cognitive distortions, specifically the sub-domain of "mind reading and should statements". As NCBI partially mediated the impact of PAR on "should statements", representing both direct and indirect effects of PAR on cognitive distortions. Especially maternal rejection has shown a stronger association with cognitive distortions through NCBI than paternal rejection. Negative beliefs about self (NCBI-S) played a more substantial role than beliefs about others (NCBI-O), indicating that self-related beliefs are more impactful in the context of parental acceptance-rejection and cognitive distortions.

Smeijers et al. (2018) showed that childhood parental rejection is linked to cognitive distortions and increased aggression in adulthood. Similarly, our study found that negative core beliefs mediate the relationship between parental rejection and cognitive distortions. Both studies highlight how early parental rejection contributes to maladaptive thinking patterns and behaviors later in life. The findings of the research by (Sireli and Colak, 2024) found that parental rejection and maternal control were positively associated with interpersonal cognitive distortions and that these distortions mediated the relationship between parental rejection and social anxiety in adolescents support the findings of the current study that negative core beliefs mediate the relationship between parental rejection and cognitive distortions. Both studies emphasize the mediating role of cognitive distortions in the link between parental rejection and psychological outcomes, reinforcing the idea that early parental rejection contributes to maladaptive cognitive patterns and emotional difficulties later on. Starr and Davila (2008) found that adolescents experiencing higher levels of parental rejection were more prone to develop negative core beliefs, which led to cognitive distortions contributing to depression and anxiety. This lines up with the current study's findings that parental rejection fosters negative core beliefs that mediate the relationship with cognitive distortions, linking early rejection with psychological issues through the formation of negative beliefs and cognitive distortions.

Halime (2023) found that parental acceptance-rejection predicts emotional and behavioral difficulties in children, which aligns with the current study's finding that parental rejection is linked to negative cognitive and emotional outcomes. However, Halime's study emphasizes the mediating role of nurturing attitudes rather than negative core beliefs in this relationship, differing from the current study's focus on cognitive distortions as the mediator. Park et al. (2016) showed that maternal rejection is linked to negative thoughts and low self-esteem, particularly in female adolescents. However, the focus on gender differences and self-esteem, rather than cognitive distortions broadly, diverges from the current study's emphasis on cognitive distortions and negative core beliefs as mediators. Similarly, Machado et al. (2014) found gender differences in the impact of parental acceptance-rejection on psychological adjustment, indicating that parental prestige moderates the relationship between paternal acceptance and adjustment in women. While the focus on prestige and gender differences in valuing parental power contrasts with the current study's focus on cognitive mediation. Therefore, while both studies highlight the role of parental attitudes in psychological outcomes, they emphasize different mechanisms and moderating factors.

Further, the study integrates theoretical perspectives like Rohner's PAR Theory and Beck's Cognitive Theory to provide a comprehensive understanding of how early experiences of parental acceptance-rejection shape core beliefs and cognitive distortions later in life. The study emphasizes the importance of targeted interventions and parenting programs, focusing on restructuring negative core beliefs and enhancing parental emotional support to mitigate maladaptive cognitive patterns in children and adolescents.

The current study contributes by exploring the role of negative core beliefs about self and others in mediating the relationship between parental acceptance-rejection and cognitive distortions, specifically "should statements" and "mind reading". It also compares maternal and paternal influences on cognitive distortions, emphasizing maternal rejection's stronger influence.

### Conclusion

In conclusion, the current study highlights the importance of perceived parental acceptance-rejection in the development and shaping of negative core beliefs and cognitive distortions. The study provides in-depth insight into the influence of early familial interactions by elucidating the mediating role of core beliefs. In particular, maternal rejection is identified as a crucial aspect in shaping negative core beliefs. Whereas negative core beliefs about self emerge as a key factor in the formation of mind reading and should statements cognitive distortions. Furthermore, the primacy of negative core beliefs is reinforced by their full mediating effect between paternal acceptance-rejection and cognition distortion. Thus, by explaining one of the bases of negative core beliefs and cognitive distortion, this study provides ground for further research in the area of clinical intervention and parental training to improve the psychological well-being of children as well as adolescents and adults.

### Limitations and Recommendations for the Future Studies

The first limitation of the study was time constraints due to which a small sample ( $n=325$ ) with disproportionate males and females was taken decreasing the generalizability and validity of the study findings. Therefore, it is suggested that a more diverse and proportionate sample should be taken. Additionally, the sampling process was limited due to the English language of assessment tools used. Hence, for future researches, a translated version should be used to get a more representative and diverse sample of the population. For the current study, a correlational research design was used which explained the leading role of parental acceptance-rejection therefore for future research it is suggested to conduct an experimental and longitudinal study as it will provide a detailed and holistic insight into how additional variables are impacting the perceived parental acceptance-rejection.

### Implications

The findings of the current study are helpful for both parental guidance and clinical practice. This study helps to understand that one of the root causes of negative core beliefs and cognitive distortions is parental rejection thus can plan interventions accordingly. Thus, the insights of this study suggest clinicians design therapeutic interventions that should focus on restructuring the negative core beliefs, improving cognitive distortion, and fostering overall psychological and emotional well-being. Moreover, it provides grounds for conducting parenting programs to explain the importance of parental acceptance and teach parents how they can support their child emotionally to prevent the occurrence and development of negative cognitive patterns in their children.

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## Supplement Material

Table S1

*Descriptive Statistics of Demographic Variables (N=325)*

Variables	<i>n</i>	%	<i>M</i>	<i>SD</i>
Age	325	100	21.23	1.73
Gender				
Male	120	36.9	20.90	2.18
Female	205	63.1	21.53	1.45
Education Level				
Matric	15	4.6		
Intermediate	33	10.2		
Undergraduate	239	73.5		
Graduate	38	11.7		
Residence				
Urban	238	73.2		
Rural	86	26.2		
Family system				
Joint	132	40.6		
Nuclear	191	58.8		
Family income				
50k-100k	120	37.7		
100k-200k	92	28.3		
200k-300k	43	14		
300k-400k	68	20.9		

*Note.* n=Frequency, %=Percentages, M=Mean, SD=Standard Deviation.

Table S1 has presented descriptive statistics of demographic characteristics. It has indicated that there were 325 participants. The overall mean (average) age of participants was 21.23 (SD=1.73). A major chunk of the sample was of males (M=20.90, SD=2.18) while the mean age of females is (M=21.5, SD= 1.45). An educational level of undergraduate (73.5%). Most of the sample reside in urban areas (73.2%) and participants living in joint and nuclear family systems were comparable. The family income of most of the participants was 50k-100k (37.7%).

**Table S2***Test of Normality of Study Measures (N=325)*

Variable	<i>k</i>	<i>M</i>	<i>SD</i>	<i>Range</i>	$\alpha$	<i>Skew.</i>	<i>Kur.</i>
PAR	48	145.4	29.4	53-188	.86	-.67	-.26
NCBI	32	79.2	20.8	37-126	.86	.15	-.554
CDS	10	78.5	20.3	25-126	.77	.03	-.205

*Note.* PAR=Parental Acceptance-Rejection Questionnaire, NCBI=Negative Core Belief Inventory, CDS=Cognitive Distortion Scale, M=Mean, SD= Standard Deviation, Skew. =Skewness, Kur. =Kurtosis,  $\alpha$ =Cronbach's Alpha level

Table S3 shows the Cronbach Alpha level, Mean, Standard Deviation, Skewness, and Kurtosis of the Parental Acceptance Rejection Questionnaire, Negative Core Belief Inventory, and Cognitive Distortion Scales. The reliability of PAR (M=145.4, SD=29.4), NCBI (M=79.2, SD=20.08), and CDS (M=78.5, SD=20.3), were 0.86, 0.86, and 0.77 respectively. PAR, NCBI, and CDS all showed slight deviations in skewness and kurtosis but remain in acceptable range for normal distribution. Subdomain of each measure reliability and normal distribution was also computed which were in acceptable range.

**Table S3***Demographic Statistics and Reliability Analysis of Study Measures (N=325)*

Variable	<i>k</i>	<i>a</i>	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>Skew.</i>	<i>Kurt.</i>
PAR	<i>k</i>	<i>a</i>	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>Skew.</i>	<i>Kurt.</i>
PARF	48	.86	145.4	29.4	53-188	-.67	-.26
FW	24	.84	74.6	15.8	29.0-96.0	-0.67	-0.26
FH	8	.86	23.7	6.6	9.0-32.0	-0.53	-0.77
FN	6	.77	19.2	4.2	7.0-24.0	-0.77	-0.28
FR	6	.77	18.7	4.4	7.0-24.0	-0.56	-0.52
PARM	4	.68	12.7	2.9	4.0-16.0	-0.84	-0.12
MW	24	.83	70.8	15.4	24.0-92.0	-0.63	-0.21
MH	8	.86	21.0	5.9	7.0-28.0	-0.62	-0.58
MN	6	.78	18.5	4.6	6.0-24.0	-0.55	-0.75
MR	6	.70	18.9	4.3	7.0-24.0	-0.59	-0.69
NCBI	4	.68	12.3	2.9	4.0-16.0	-0.85	0.03
NCBI_S	32	.86	79.2	20.8	37.0-126.0	0.15	-0.55
SI	21	.90	50.8	15.5	21.0-84.0	0.22	-0.75
SV	4	.61	9.8	3.3	4.0-16.0	0.27	-0.83
SUL	5	.68	13.1	3.9	5.0-20.0	-0.11	-0.84
SW	6	.81	14.7	5.2	6.0-24.0	0.02	-1.11
NCBI_O	6	.85	13.1	15.5	6.0-24.0	0.26	-1.04
CDS	11	.83	28.4	7.9	11.0-44.0	-0.08	-0.77
MR	10	.77	78.5	20.3	25.0-126.0	0.03	-0.20
C	1	.65	8.3	2.5	2.0-14.0	0.08	-0.18
AON	1	.53	7.7	2.3	2.0-14.0	0.04	-0.14

ER	1	.61	7.7	2.6	2.0-14.0	-0.06	-0.43
L	1	.60	8.0	2.6	2.0-14.0	-0.21	-0.50
MF	1	.69	7.8	2.6	2.0-14.0	-0.06	-0.26
OG	1	.67	7.7	2.7	2.0-14.0	0.35	-0.38
P	1	.77	7.4	2.8	2.0-14.0	0.09	-0.62
SS	1	.71	7.6	2.8	2.0-14.0	0.05	-0.63
MDP	1	.63	8.0	2.8	2.0-14.0	-0.08	-0.55

*Note.* PAR=Parental Acceptance-Rejection Questionnaire, PARF= Parental Acceptance-Rejection Father Form, FW= Father Warmth, FH=Father Hostility, FN=Father Negligence, FR=Father Rejection, PARM=Parental Acceptance-Rejection Mother Form, MW=Mother Warmth, MH=Mother Hostility, MN=Mother Negligence, MR=Mother Rejection, NCBI=Negative Core Belief Inventory, NCBI-M=Negative Core Belief Inventory about myself, SI=Myself inferiority. SV=Myself Vulnerability, SUL=Un lovability, SW=myself Worthlessness, NCBI\_O= Negative Core belief Inventory about others, CDS=Cognitive Distortion Scale, MR= Mind Reading, C= Catastrophization, AON=All or nothing thinking, ER= Emotional Reasoning, L=labeling, MF=Mental Filter, OG= Overgeneralization, P=Personalization, SS=Should Statements, MDP=Minimize or Disqualifying the Positive, M=Mean, SD= Standard Deviation, Skew. =Skewness, Kur. =Kurtosis,  $\alpha$ =Cronbach's Alpha level