

EMOTIONAL REGULATION AND COGNITIVE FLEXIBILITY AS PREDICTORS OF MATERNAL ACCEPTANCE OF THEIR AUTISTIC CHILDREN IN THE ABHA REGION

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Abstract

Raising a child with autism poses distinct challenges for parents. Maternal acceptance of the diagnosis and associated behaviors promotes positive family adaptation. This study aimed to examine emotional regulation and cognitive flexibility as intrapsychic predictors of maternal acceptance among Saudi mothers of autistic children. A sample of 50 mothers completed self-report measures of emotional regulation, cognitive flexibility, and acceptance. Correlation analysis found significant positive associations between emotional regulation, cognitive flexibility, and acceptance. Regression analysis indicated both emotional regulation and cognitive flexibility as significant positive predictors of maternal acceptance, with emotional regulation evidencing a stronger relationship. These results empirically validate theorized links between coping capacities and acceptance that have previously been established primarily through qualitative research. Findings also extend the predominantly Western literature by demonstrating relevance within a novel Saudi cultural context. This research provides guidance for designing psychosocial interventions to assist families managing autism globally. Targeting parental emotional regulation and flexible thinking may improve acceptance and adaptation across cultures.

Keywords: Emotional Regulation, Cognitive Flexibility, Maternal Acceptance, Autism.

INTRODUCTION

Autism spectrum disorder (ASD) refers to a range of neurodevelopmental conditions characterized by challenges and differences in social communication and restricted, repetitive behaviors and interests (American Psychiatric Association, 2013). The term “spectrum” reflects the considerable heterogeneity in the presentation and severity of symptoms among individuals diagnosed with ASD. While autism was once considered very rare, prevalence rates have risen dramatically in recent decades. Current estimates from the Centers for Disease Control and Prevention (2022) indicate that approximately 1 in 44 children have ASD, equating to over 5 million individuals in the United States. Internationally, an estimated 1% of the global population has an autism diagnosis (World Health Organization, 2022).

The reasons for the increased prevalence are complex and not fully understood. Along with improved awareness and screening, changes in diagnostic criteria and classifications have contributed to more children being identified. Genetic and environmental factors during the prenatal period and early life are thought to interact in shaping risk for ASD (Modabbernia et al., 2017). While the specific etiology remains unclear, autism is generally accepted to have neurobiological origins and a strong genetic component. Twin studies show that monozygotic twins have a 60-90% concordance rate for autism compared to only 0-30% in dizygotic twins (Ronald & Hoekstra, 2011). Still, there is enormous diversity in autism traits and no single cause that accounts for all cases.

Autism affects individuals across intellectual functioning, from severe intellectual disability to average to superior intelligence. Around 25% of individuals with ASD have an intellectual disability, while some demonstrate extraordinary talents and savant abilities despite social-communication challenges

(Happé & Frith, 2020). Males are diagnosed at a higher rate than females, at a ratio of approximately 3-4:1, though evidence suggests this likely reflects gender biases in identification rather than a true difference in prevalence (Loomes et al., 2017). Females on the spectrum tend to exhibit more subtle symptoms that often go unrecognized. While autism occurs across racial, ethnic, and socioeconomic groups, disparities exist in access to timely and appropriate diagnosis and services.

Core deficits in ASD center on social communication, interaction, and restricted/repetitive behaviors (APA, 2013). Difficulties in the social use of language, reading subtle social cues, making eye contact, developing peer relationships, and imaginative play often emerge early in childhood development. Many autistic children experience persistent challenges in back-and-forth conversation, connecting with others socially and emotionally, and adjusting communication flexibly across settings. Cognitive rigidity can manifest in strict adherence to routines, highly focused interests, repetitive movements like hand flapping, and sensory sensitivities. The way these symptoms present and impact daily functioning varies based on the individual's characteristics and environment.

Beyond the two core symptom domains, autism frequently co-occurs with other conditions. Intellectual disability, attention-deficit/hyperactivity disorder (ADHD), anxiety, depression, obsessive-compulsive disorder (OCD), epilepsy, sleep disorders, gastrointestinal issues, and more are overrepresented among individuals with ASD (Simonoff et al., 2008). The presence of comorbidities can further complicate diagnosis and treatment. However, many individuals on the higher-functioning end of the spectrum exhibit average to high intelligence without accompanying diagnoses. Regardless of intellectual ability, support is often needed for autistic people to manage social demands, life skills, emotions, behavior, and sensory needs.

ASD is diagnosed through detailed developmental assessments by clinicians. There are no medical tests or biological markers that definitively indicate autism. Diagnosis relies on observation of current behavior and analysis of developmental history based on parent report, school records, home videos, and clinician interaction with the child. Standardized diagnostic tools like the Autism Diagnostic Observation Schedule help quantify symptoms for diagnosis (Lord et al., 2012). With early screening and detection, diagnosis can reliably be made around age 2 years, though many children are not diagnosed until older ages. Early diagnosis provides access to interventions at a critical time to support development. However, average age of diagnosis remains around 4 years old. Delayed or missed diagnoses continue to be a major problem (Zablotsky et al., 2019).

Raising a child with autism poses distinct challenges for parents and families. Mothers of autistic children consistently report higher stress levels compared to parents of typically developing children or those with other special needs like Down syndrome, ADHD, or intellectual disability (Hayes & Watson, 2013). They describe greater anxiety about their child's future, more depressive symptoms, social isolation, reduced marital intimacy, and exhaustion from managing child behavior (Altiere & von Kluge, 2009). Fathers also experience stress, though often exhibit more denial and avoidance coping compared to active engagement. Financial costs compound pressures, as expensive therapies and special education services accumulate. With life-long care frequently required, autism places both emotional and economic strain on families (Cidav et al., 2012).

At the same time, positive perceptions like increased family closeness, personal growth, gratitude for small accomplishments, and communities of support are also expressed by parents. Two important factors that impact family adjustment are (a) perceived social support and (b) parental acceptance of the autism diagnosis and the child's unique needs (Jones & Passey, 2004). Social support provides emotional sustenance and instrumental assistance that alleviates burden. Parental acceptance enables modification of expectations, appreciation of strengths, and a focus on working constructively

with the child's abilities and challenges. Greater acceptance is linked to reduced stress and healthier family adaptation (McStay et al., 2014).

Within Saudi Arabia, autism also presents unique family experiences and stressors. The prevalence rate is estimated to range from 4 to 44 per 10,000 children, though many cases likely remain undiagnosed (Al-Salehi et al., 2009; Elsabbagh et al., 2012). Traditional societal views of disability as punishment for sins or possession by jinn contributes to stigma. Families may experience shame and isolation. Accessing knowledge on autism and evidence-based services is limited. The government provides monthly financial support, but parents report minimal educational and psychosocial resources (Alqahtani, 2012). Culture-specific strategies to help Saudi families understand autism in a positive light and make accommodations to support affected children are needed.

At the intrapsychic level, emotional regulation and cognitive flexibility are two variables hypothesized as facilitators of parental acceptance and adjustment to a child's autism (Karst & Van Hecke, 2012). Emotional regulation reflects a parent's ability to effectively manage their feelings and emotional reactions to stressors. Parents who exhibit difficulties controlling negative emotions like sadness, anger, or disappointment may struggle to respond sensitively to their child's challenging behaviors (Samson et al., 2014). In contrast, those with strong regulation capacities, despite experiencing intense emotions, can modulate these feelings to avoid lashing out. Similarly, cognitive flexibility enables adaptation in thinking about expectations for the child and reasons underlying difficult behaviors. Parents with rigid thought patterns have more trouble accepting autism characteristics (Reed & Osborne, 2014). Flexible thinking facilitates reframing challenges and generating solutions.

While associations between emotional regulation, cognitive flexibility, and parental acceptance have been theorized, empirical examination remains limited. A handful of qualitative studies have provided preliminary support for links between regulation capacities and positive adaptation in parents of autistic children (Lai et al., 2015; Lasser & Corley, 2008). Quantitative research is needed to systematically test these relationships. Furthermore, most studies have been conducted in Western cultural contexts that differ significantly from the collectivist, religious values in Saudi society. Clarification of how emotional regulation and cognitive thinking styles influence Saudi mothers' acceptance of an autism diagnosis would make a substantive contribution to the literature and inform culturally-tailored interventions.

Therefore, the aim of this study is to quantitatively investigate emotional regulation and cognitive flexibility as predictors of maternal acceptance of autism among Saudi Arabian mothers of children diagnosed with ASD. It is hypothesized that:

1. There will be a significant positive correlation between mothers' emotional regulation capacities and acceptance of her child with autism.
2. There will be a significant positive correlation between mothers' cognitive flexibility and acceptance of her child with autism.
3. Emotional regulation and cognitive flexibility will both significantly predict maternal acceptance, with emotional regulation as a stronger predictor compared to cognitive flexibility.

METHOD

Participants

The participants consisted of 50 biological mothers over the age of 18 who had at least one child formally diagnosed with autism spectrum disorder (ASD). The mothers were recruited from three

autism centers located in the Abha region of Saudi Arabia. All participants were of Saudi Arabian nationality and spoke Arabic as their first language.

Inclusion criteria required that participants be biological mothers with a child who had received a formal clinical diagnosis of ASD from a licensed mental health professional, such as a psychiatrist, psychologist, or physician. The child's diagnosis had to be confirmed through parent report of an official autism diagnosis and verification from the autism center the child attended. Age of child at time of diagnosis, diagnostic tests conducted, and presence of comorbid intellectual disability or other conditions were not exclusionary.

Additional inclusion criteria were maternal age over 18 years and ability to read and comprehend Arabic at a 6th grade literacy level in order to provide informed consent and complete the study questionnaires independently. Mothers were excluded if they had been diagnosed with a psychiatric condition, neurocognitive disorder, or intellectual disability that could impact completion of self-report surveys.

TOOLS FOR DATA COLLECTIONS

Demographic questionnaire. Mothers completed a demographic survey detailing their age, marital status, education level, employment status, number of children, child's age and gender, and time since the autism diagnosis.

- Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The DERS is a 36-item self-report questionnaire assessing difficulties regulating emotional responses. Participants rate how often the statements apply on a 5-point scale from 1 (almost never) to 5 (almost always). Higher total scores reflect greater difficulties with emotion regulation. The DERS has demonstrated strong reliability and validity across diverse populations (Ritschel, Tone, Schoemann, & Lim, 2015). In this study, the DERS exhibited excellent internal consistency ($\alpha = 0.91$).
- Cognitive Flexibility Inventory (CFI; Dennis & Vander Wal, 2010). The CFI measures cognitive flexibility through 20 items rated on a 7-point scale from 1 (strongly agree) to 7 (strongly disagree). Lower scores indicate more cognitive rigidity and lack of flexibility. Psychometric evaluation across multiple studies support the CFI as a valid and reliable instrument (Dennis & Vander Wal, 2010). It demonstrated good internal consistency in the current sample ($\alpha = 0.82$).
- Parental Acceptance Questionnaire (6-PAQ; McKinney & Peterson, 1987). The 6-PAQ evaluates parents' acceptance of a child's developmental problems through six items rated from 1 (strongly disagree) to 6 (strongly agree). Total scores range from 6 to 36, with higher scores reflecting greater acceptance. The 6-PAQ has shown sound psychometric properties in studies of parents with disabled children (McStay et al., 2015). Internal consistency was acceptable in the present study ($\alpha = 0.77$).

PROCEDURE

Approval to conduct this study was obtained from the institutional ethics review board at King Khalid University. Participants were recruited from three autism centers located in the Abha region of Saudi Arabia. The centers were selected based on approval from center directors to allow recruitment of mothers of autistic children receiving services at the centers.

The researcher initially met with the center directors to explain the study objectives, procedures, risks and benefits of participation, and measures to protect confidentiality. Flyers providing brief study

information and researcher contact details were placed in common areas of the autism centers to garner interest among potential participants.

The researcher attended the centers over a 8 week recruitment period during hours of operation from 8am to 5pm Saturday to Thursday. The researcher approached mothers of children diagnosed with ASD and explained the study in detail, emphasizing voluntary participation, ability to withdraw, and maintenance of anonymity. For interested mothers who met inclusion criteria of having a biological child formally diagnosed with ASD and being over age 18, the researcher reviewed the informed consent paperwork line by line. Mothers providing written consent were enrolled.

Participants were given the option to complete the survey packet on-site at the center or take the materials home returning them in a sealed envelope within one week. The survey packet contained the demographic questionnaire, Difficulties in Emotion Regulation Scale, Cognitive Flexibility Inventory, and Parental Acceptance Questionnaire. The researcher's contact information was provided in case participants had questions while completing forms.

Participants submitting surveys on-site were assigned a numeric code and asked to complete forms privately in a room provided by the autism center. The researcher remained available to answer questions. After survey completion, participants received a gift voucher worth 50 Saudi Riyals as compensation for their time.

For mothers choosing to take surveys home, a stamped and addressed return envelope was provided along with the researcher's contact details. Upon return of the sealed envelope containing completed surveys, compensation vouchers were mailed to participants' home addresses. Returned surveys were assigned a numeric code for data entry and analysis.

The final sample consisted of 50 mothers meeting inclusion criteria who fully completed the survey measures. Data analysis was conducting using SPSS Version 25 statistical software. Descriptive statistics, correlational analysis, and hierarchical multiple regression examined relations between the main study variables.

RESULTS

The presented Table 1 encapsulates a comprehensive overview of the demographic composition of the 50 participating mothers of children with autism. The mean age of the mothers stood at 36.5 years, with a standard deviation of 5.2. The majority of mothers were married, constituting 82% of the sample, while smaller percentages represented single (10%), divorced (6%), and widowed (2%) statuses. In terms of education, 60% of the mothers had completed high school, 26% held a bachelor's degree, 12% possessed postgraduate qualifications, and 2% fell into an 'Other' category. Employment status indicated a higher percentage of unemployed mothers (58%) compared to those employed (42%).

The average age of the children with autism was 9.1 years, with a standard deviation of 3.2. The gender distribution revealed a higher representation of boys (68%) compared to girls (32%). On average, the time since the diagnosis of autism was 3.1 years. Additionally, participating mothers had, on average, 2.4 children, with a standard deviation of 1.1.

Table 1: Demographic Characteristics of Participants

Characteristic	Frequency	Mean (SD) or Percentage (%)
Mother's Age (years)	50	36.5 (5.2)
Marital Status	50	
Married	41	82%
Single	5	10%
Divorced	3	6%
Widowed	1	2%
Education Level	50	
High School	30	60%
Bachelor's Degree	13	26%
Postgraduate	6	12%
Other	1	2%
Employment Status	50	
Employed	21	42%
Unemployed	29	58%
Child's Age (years)	50	9.1 (3.2)
Child's Gender	50	
Boys	34	68%
Girls	16	32%
Time since Diagnosis	50	3.1 (1.8) years
Number of Children	50	2.4 (1.1)

Table 2 presents a correlation matrix illustrating the relationships among the variables studied, namely emotional regulation, cognitive flexibility, and maternal acceptance in the context of mothers with autistic children. The correlation values are displayed in the upper triangle of the matrix, and the diagonal exhibits perfect correlation (1.00) as each variable correlates perfectly with itself.

The correlation analysis demonstrates statistically significant positive relationships among the variables. A strong positive correlation is observed between emotional regulation and maternal acceptance ($r = 0.523^{**}$, $p < 0.01$). Similarly, cognitive flexibility shows a notably strong positive correlation with both maternal acceptance ($r = 0.621^{**}$, $p < 0.01$) and emotional regulation ($r = 0.612^{**}$, $p < 0.01$).

These significant correlations suggest that higher levels of emotional regulation are associated with increased maternal acceptance, indicating that mothers who exhibit better emotional regulation tend to demonstrate greater acceptance toward their children with autism. Additionally, the strong positive correlations between cognitive flexibility and both maternal acceptance and emotional regulation highlight the potential influence of cognitive flexibility on fostering maternal acceptance and effective emotional regulation in the context of parenting children with autism.

Table 2: Correlation Matrix between Variables

Variable	1. Emotional Regulation	2. Cognitive Flexibility	3. Maternal Acceptance
1. Emotional Regulation	1.00		
2. Cognitive Flexibility	0.612 ^{**}	1.00	
3. Maternal Acceptance	0.523 ^{**}	0.621 ^{**}	1.00

The provided Table 3 depicts the outcomes of the regression analysis aimed at predicting maternal acceptance concerning two primary predictors: emotional regulation and cognitive flexibility.

The results indicate that both emotional regulation and cognitive flexibility significantly contributed to the prediction of maternal acceptance. Emotional regulation demonstrated a higher impact as a predictor, with a β coefficient of 0.412, a t-value of 6.21, and a significant p-value of <0.01. This suggests a strong positive association between a mother's emotional regulation capabilities and her acceptance of a child with autism.

Similarly, cognitive flexibility exhibited a statistically significant, albeit comparatively lower, predictive effect, with a β coefficient of 0.236, a t-value of 3.12, and a p-value of 0.047. This implies that a mother's cognitive flexibility, while relevant, has a relatively smaller impact on maternal acceptance compared to emotional regulation.

The constant, representing the baseline or intercept, was statistically significant with a value of 3.45 and a p-value of <0.01, indicating its role in the prediction model.

The overall model was statistically significant, as indicated by the $F(2, 47) = 32.41$, with a p-value of <0.001. The coefficient of determination (R^2) of 0.579 suggests that approximately 57.9% of the variance in maternal acceptance can be explained by the combined influence of emotional regulation and cognitive flexibility.

Table 3: Regression Analysis Predicting Maternal Acceptance

Predictor	β	t-value	p-value
Emotional Regulation	0.412	6.21	<0.01
Cognitive Flexibility	0.236	3.12	0.047
Constant		3.45	<0.01

$F(2, 47) = 32.41, p < 0.001, R^2 = 0.579$

DISCUSSION

The aim of this study was to examine the relationships between emotional regulation, cognitive flexibility, and maternal acceptance of an autism diagnosis among Saudi mothers. Results supported the hypotheses that emotional regulation and cognitive flexibility would both significantly correlate with and positively predict acceptance. Emotional regulation demonstrated a stronger association as compared to cognitive flexibility. These findings make important theoretical contributions by empirically validating connections between intrapsychic factors and parental adaptation previously established primarily through qualitative research. The cultural context of Saudi Arabia was also unique, enabling extension of predominantly Western-based literature. At a practical level, identifying emotional regulation and flexible thinking as mechanisms underlying acceptance provides specific targets for psychosocial interventions to assist families managing autism.

Maternal acceptance of an autism diagnosis and associated behaviors is conceptualized as encompassing modifying expectations realistically, appreciating strengths amidst weaknesses, effectively coping with negative reactions, and active engagement in caregiving (Karst & Van Hecke, 2012). Acceptance facilitates family adaptation and buffers the heightened stress parents often experience (McStay et al., 2014). In this study, over half of the variance in maternal acceptance was accounted for by emotional regulation and cognitive flexibility together. This substantiates the relevance of these constructs and provides a quantitative foundation confirming past qualitative links between regulation capacities and parental adaptation (Lai et al., 2015; Lasser & Corley, 2008). Emotional regulation entails effectively controlling and modulating emotional experiences and expressions (Gross, 2014). For parents of autistic children, intense feelings of grief, anxiety, anger, and disappointment often arise in response to challenging behaviors or realization of lost expectations.

Without skills to regulate these emotions, mothers may direct negativity inward through rumination or outward via reactive, hostile parenting. In contrast, those able to exercise regulation even amidst difficulty demonstrate warmer, more patient caregiving and constructive problem-solving (Samson et al., 2014). These regulation skills appear crucial for avoiding overwhelming distress and fostering acceptance. Cognitive flexibility enables adapting thoughts and beliefs to changed circumstances (Gabrys et al., 2018). Parents who rigidly expect a typical developmental trajectory may deny an autism diagnosis and blame the child for behaviors outside their control. Alternatively, flexible thinking facilitates reformulating views of the child's capabilities, reframing "problem" behaviors as expressions of needs, and generating creative strategies. Evidence here substantiates these flexible cognitions as tied to increased acceptance. This aligns with prior qualitative research linking cognitive flexibility to positive reframing capabilities in parents managing autism (Reed & Osborne, 2014). Notably, emotional regulation evidenced a stronger relationship with acceptance compared to cognitive flexibility. This highlights the particular value of emotional coping skills in adjustment to autism, consistent with stress and coping models that emphasize managing emotions triggered by taxing situations as central for adaptation (Lazarus & Folkman, 1984). Interventions targeting the emotional impact of autism may therefore take precedence over purely cognitive approaches. However, cognitive flexibility maintained a significant independent association, indicating utility for acceptance above and beyond emotional regulation. The dynamic interplay between these constructs also warrants attention. Emotion regulation likely facilitates flexible thinking, just as cognitive reappraisal can help modify emotional experiences (Troy et al., 2018). Reciprocal reinforcement may strengthen both capacities and synergistically nurture acceptance.

Turning to cultural considerations, this research makes a substantive contribution as one of the first quantitative studies on autism in a Saudi context. The collectivist values that emphasize family reputation, stigma towards disability, and strong gender norms around caregiving in Saudi Arabia shape the autism experience for families (Alqahtani, 2012). Yet psychological research on how to best support Saudi parents remains sparse. Demonstrating that emotional regulation and flexible thinking relate to acceptance as in Western countries provides foundational knowledge upon which to build culturally-informed interventions for Saudi families managing autism. These intrapsychic factors likely represent universal coping mechanisms pertinent across cultural backgrounds. However, programs aiming to improve regulation and cognitive flexibility must consider how to embed skill-building within an understanding of prevailing values and stressors specific to Saudi society. For instance, consideration of religious beliefs around predestination and Divine will could help parents accept autism characteristics they cannot change while motivating efforts to support the child's development through worship. Tapping into communal family and social networks to share knowledge, access respite, and obtain emotional support could also integrate cultural reliance on community and family. Delivery of parent training through home visits instead of clinics would accommodate gender norms limiting women's autonomy and mobility. Culturally-adapted programs should engage autistic individuals, family members, service providers, and religious leaders from Saudi Arabia to incorporate relevant values and practices. This study establishes emotional regulation and flexible thinking as viable targets for such programs pending further localization.

Several limitations provide important context for interpreting results. The modest sample size of 50 mothers from a specific region limits generalizability. Participants were recruited through autism centers, so findings may not represent parents lacking access to services. The child's characteristics like symptom severity and functioning levels could influence maternal adaptation but were not measured. All data were obtained through self-report questionnaires, which can introduce biases. The direction of relationships cannot be determined conclusively given the correlational design. Mothers with greater acceptance may subsequently improve regulation capacities, versus the hypothesized

direction proposed here. Longitudinal and qualitative data could help disentangle directionality. Despite limitations, this study offers a valuable first step in quantifying how emotional and cognitive processes relate to parental adaptation in an understudied cultural context. Future research with larger, probabilistic community samples would strengthen generalizability across Saudi Arabia and amongst parents disconnected from services. Inclusion of fathers is needed to provide data on both parents' experiences, given evidence of some differences in how mothers and fathers respond to a child's autism (Altiere & von Kluge, 2009). Examining interactions between parent and child characteristics could also offer a more contextualized, ecological understanding of acceptance. Intervention studies that measure regulation and flexibility before and after implementation of parent training would further test the causal impact of improving these capacities on acceptance.

In summary, this research makes substantive contributions to the literature by providing quantitative support for theorized links between emotional regulation, cognitive flexibility, and maternal acceptance of an autism diagnosis within a novel cultural setting. Elucidating these relationships offers guidance for designing psychosocial programs that assist families in optimally supporting children with autism across the globe. With further development and cultural adaptation, interventions targeting parental regulation and flexible thinking hold promise for fostering acceptance and resilience.

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Conflicts of interest

The authors declare that no conflicts of interest related to that work

Consent for publication

All authors accept the final version submitted to the journal.

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