



Article

Relative Contribution of Anxiety, Depression and Difficulties in Emotional Regulation in Forecasting Emotional Sensitivity of Autistic Children's Mothers

Ereny Gobrial ^{1,*} and Ali Shoeib ²¹ Mental Health Department, Faculty of Education, Zagazig University, Zagazig 44519, Egypt² Mental Health Department, Faculty of Education, Menoufia University, Shebeen El Kom 32511, Egypt

* Correspondence: ereny.gobrial@hotmail.co.uk

Abstract: This study aimed to determine the relative contribution of anxiety, depression, and difficulties in emotional regulation (DER) on emotional sensitivity (ES) among mothers of autistic children. Methods: Ninety-one mothers (Mean age= 36.4 years, SD = 6.95) participated in this study. GAD-7, HDRS-17, and emotional sensitivity scales were applied in this study. DER was measured with difficulties of emotion regulation scale. Results: Findings indicated that mothers of autistic children exhibit high anxiety, depression, DER, and ES levels. These findings provide evidence of a unique association between ES and anxiety and depression. Findings highlighted that ES is directly related to anxiety and depression, while DER had no influence on ES among these mothers. Conclusions: The findings advance our understanding of how ES is influenced by the most prevalent emotional problems (anxiety and depression) among mothers of autistic children. The results were clear about the unique role of depression and anxiety in predicting the risk for ES. These findings highlight the importance of screening for anxiety and depression in autistic children's mothers to avoid elevated levels of ES and potentially to protect the mother's psychological well-being.

Keywords: anxiety; depression; difficulties emotional regulation; emotional sensitivity; autism spectrum disorders; mothers



Citation: Gobrial, Ereny, and Ali Shoeib. 2023. Relative Contribution of Anxiety, Depression and Difficulties in Emotional Regulation in Forecasting Emotional Sensitivity of Autistic Children's Mothers. *Social Sciences* 12: 17. <https://doi.org/10.3390/socsci12010017>

Academic Editor: Nigel Parton

Received: 2 October 2022

Revised: 20 December 2022

Accepted: 23 December 2022

Published: 27 December 2022



Copyright: © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by qualitative impairments in social interaction, communication and repetitive stereotyped behaviour (APA 2013). Recent estimates suggest that 1 in 54 children are diagnosed with ASD (CDC 2020). The present increase in the number of ASD diagnoses is concerning.

Raising an autistic child can be an overwhelming experience for parents (Bujnowska et al. 2019; Hickey et al. 2019) compared to parents of typically developing children (Totsika et al. 2011; Schieve et al. 2007; Eisenhower et al. 2005) and parents of children with other disabilities, such as, for example, intellectual disabilities (Totsika et al. 2011; Blacher and McIntyre 2006). Research has established well-characterized associations between a child's autism and parental psychological distress (Al-Oran and Al-Sagarat 2016; ElDib 2016; Pisula 2014). The consequences of having an autistic child within the family may affect all family members; however, mothers are more likely to suffer from emotional problems and psychological stress (Estes et al. 2013).

There is substantial evidence that anxiety and depression are highly prevalent among mothers of autistic children (AlTourah et al. 2020; Mohamed 2018; Al-Farsi et al. 2016; Al-Oran and Al-Sagarat 2016; ElDib 2016; Pisula 2014; Rezendes and Scarpa 2011; Duarte et al. 2005). This could impact on quality of life and life satisfaction among these mothers (Öz et al. 2020).

Why do parents with autistic children experience a high level of anxiety, depression, and other emotional problems? Potential factors could be emotion sensitivity (ES) and

emotion regulation (ER) as possible underlying factors in psychopathology ([Attwood et al. 2017](#); [Aldao et al. 2010](#); [Kring 2008](#)). The literature has suggested that ES is considered to be one of the fundamental factors leading to anxiety and depression ([Shoeib 2021](#); [Kraines et al. 2018](#)). Furthermore, it is suggested that ER is a possible factor able to explain the high prevalence rates of emotional problems such as anxiety and depression ([Loevaas et al. 2018](#); [Weiss et al. 2014](#)).

1.1. Factors Influence Emotional Sensitivity among Mothers of Autistic Children

ES is considered as a central component of mental health. Meanwhile, high levels of anxiety are associated with impairment in emotional processing, especially ES ([Attwood et al. 2017](#)). ES can be defined as highly alert to external information, easy to obtain clues, and as having a higher ability to perceive subtle changes ([Li et al. 2021](#)). The construct of ES involves two dimensions: First, positive sensitivity is represented in establishing friendships and sympathy. Second, negative sensitivity is represented in exaggerated reactions to simple events that make people appear emotionally immature ([Shoeib 2021](#); [Wall et al. 2018](#)).

Furthermore, difficulties in emotional regulation (DER) are considered a key factor in developing mental health problems ([Aldao et al. 2010](#); [Berenbaum et al. 2003](#)).

Research has demonstrated that mothers of autistic children experience high levels of anxiety and depression; yet, the relationship between anxiety, depression, DER, and ES among those mothers has not been investigated. In this context, the current study sought to evaluate the relative contribution of anxiety, depression, and DER on ES among mothers of autistic children.

Mothers of autistic children would be more likely to experience a higher level of ES. Many factors can influence a mother's ES, including self-blaming, social anxiety, and depression ([Lovell and Wetherell 2020](#); [McStay et al. 2014](#); [Rezendes and Scarpa 2011](#)). Other potential factors may include children's behaviour. Research focusing on parenting stress has illustrated a significant relationship between anxiety/depression and a child's behaviour ([Rodriguez et al. 2019](#); [Rezendes and Scarpa 2011](#)). Due to a lack of awareness about ASD ([Rezendes and Scarpa 2011](#)), people often blame mothers for their children's behaviour with hurtful comments. Therefore, mothers of autistic children may prefer to isolate themselves at home from society ([Gobrial 2018](#)).

1.2. Emotion Regulation, Depression, and Anxiety

Emotion regulation (ER) is defined as "the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one's goal" ([Thompson 1994](#), p. 27). It is the strategy that a person employs to modify the expression of emotional experiences. The success of ER depends on the adaptation of responses to situational demands, including stressful events ([Dennis 2007](#); [Campbell-Sills and Barlow 2007](#); [Cole et al. 2004](#); [Gross 1998](#)).

ER has two main dimensions: intrapersonal processes and interpersonal emotion regulation processes ([Gross and John 2003](#)). It includes those conscious and non-conscious strategies that maintain, increase, or decrease one or more components of emotional responses ([Gross 1998](#)).

ER is increasingly being incorporated to advance our knowledge of psychopathology's model ([Aldao et al. 2010](#); [Berenbaum et al. 2003](#)). It can be understood as the processes or activities of managing emotions and the cognitive part of coping. ER plays a major role in anxiety and depression ([Nolen-Hoeksema 2012](#); [Gross 1998](#); [Thompson 1994](#)). Thus, ER has been considered as a main element of psychopathology, and any difficulties in regulation could lead to mental health disorders ([Bradley et al. 2011](#); [Aldao et al. 2010](#); [Mennin and Farach 2007](#); [Berenbaum et al. 2003](#)).

Research has illustrated that exposure to chronic stress is more likely to reduce emotional regulation capacity ([Dvir et al. 2014](#); [Kim et al. 2013](#)) and has reported high prevalence rates of depression and parenting stress among mothers of autistic children ([Miranda et al.](#)

2019; Hou et al. 2018; Mohamed 2018; Estes et al. 2013). Furthermore, studies have illustrated that mothers of autistic children experience high levels of anxiety and social anxiety (AlTourah et al. 2020; Al-Farsi et al. 2016; Kuusikko-Gauffin et al. 2013; Rezendes and Scarpa 2011).

Mothers of autistic children are thought to be emotionally sensitive, resulting in a higher likelihood of experiencing difficulties in emotional regulation compared to other mothers of typically developed children. Despite there being considerable research on the topic of emotional problems among parents of autistic children, our understanding of the mechanisms by which DER, anxiety, depression, and ES in autistic children's mothers are associated is limited. A review of the literature reveals a paucity of studies about ES in mothers of autistic children. Therefore, this study aimed to evaluate the prevalence of anxiety, depression, ES, and DER among mothers of autistic children; to determine the relationship between DER and anxiety, depression, and ES; and to clarify the relative contribution of ES to anxiety, depression, and ER, and investigate if anxiety, depression, and DER can predict ES and develop a prediction model.

Therefore, the following hypotheses were examined: First, we hypothesized that mothers of autistic children are characterized by ES and experience high levels of anxiety and depression; specifically, it was expected that increases in ES would be associated with an increased risk of anxiety and depression. Second, we hypothesized that there is a relationship between ES and anxiety/depression/DER. Third, we hypothesized that we could predict ES through anxiety and depression.

2. Materials and Methods

Ethical approval was granted from the University Research Ethics Committee. Participants were assured of the anonymity and confidentiality of their responses.

Participants consisted of 91 mothers of autistic children aged between 4 and 18. A majority of children were boys (81.3%), while 18.7% were girls. Mothers were aged between 23 and 49 years (Mean age = 36.4 years, SD = 6.95). Mothers were recruited via social media groups for ASD. The majority of mothers (91.2%) were married, while (4.4%) were divorced and (4.4%) were widowed. Unemployed mothers accounted for 65.9%. Mothers most often reported having a graduate degree (69.2%), followed by (16.6%) having a post-graduate degree and (14.2%) having a secondary education. Participating mothers were mostly Egyptian (60.4%), while 39.6% were from 7 different countries, including Syria, Iraq, Morocco, Jordan, Algeria, Sudan, and Tunisia. All mothers spoke one language: 'Arabic'. For detailed parent/child characteristics, refer to Table 1.

Table 1. Demographic data of the participants.

Characteristics	Total Sample (N= 91) (%)
Age, Mean (SD)	
Mothers	36.4 (6.95)
Children	17.13 (5.25)
Marital status	
Married	83 (91.2)
Divorced	4 (4.4)
Widowed	4 (4.4)
Work status	
Employed	31(34)
Unemployed	60 (65.9)
Child sex	
Male	M = 74 (81.3)
Female	F = 17 (18.7)
Child-birth order	
First	51 (56%)
Second	16 (17.5%)
Third	24 (26.4%)

Table 1. *Cont.*

Characteristics	Total Sample (N= 91) (%)
Educational	
Secondary	13 (14.2)
High Education	63 (69.2)
Post-graduate	15 (16.6)
Nationality	
Egypt	55 (60.4)
Syria	10 (10.9)
Iraq	10 (10.9)
Morocco	5 (5.5)
Palestine	3 (3.3)
Jordan	3 (3.3)
Algeria	3 (3.3)
Tunisia	1 (1)
Sudan	1 (1)

The participants were recruited through various Facebook groups concerning parents of autistic children. An announcement was posted on targeted groups. Participants were directed to a link where they could complete the measures online. The online survey link was available for completion between February and March 2021. This study has considered the anonymity of the participants. Informed consent was sought and obtained from each participant before completing the online survey.

2.1. Measurements

(1). Difficulties in Emotion Regulation Scale (DERS, Gratz and Roemer 2004) is a 36-item self-report scale scored on a 5-point scale ranging from 1 (almost never) to 5 (almost always), and higher scores indicate more difficulties in emotion regulation. The DERS is a multidimensional instrument that incorporates six separate but related subscales: (1) Nonacceptance: non-acceptance of emotional responses; (2) Clarity: lack of emotional clarity; (3) Awareness: lack of emotional awareness; (4) Strategies: limited access to emotion regulation strategies; (5) Impulse: impulse control difficulties; (6) Goals: difficulties engaging in goal-oriented behaviour. Additionally, all six subscales have previously been found to be positively correlated with depression in adults (Orgeta 2009). The DERS has shown internal consistency, construct, and predictive validity. DERS scores and subscale scores have been found to have high internal consistency within both clinical (Gratz et al. 2008) and nonclinical populations (Gratz and Roemer 2004). The DERS demonstrated good reliability in the current study, and the Cronbach's α was 0.751.

(2). Emotional Sensitivity Scale (ESS) is a 43-item self-report measure in which respondents indicate ES related to ASD on a four-point Likert-type scale (0–4), and the degree to which they are concerned about their ES is related to caring for an autistic child. This scale is adapted from the emotional sensitivity scale (ESS) (Guarino 2003) and uses the same factors. The ESS consists of two factors: Negative Emotional Sensitivity (NES) (self-centered), with 28 items, and Positive Emotional Sensitivity (PES), with 15 items. In the current study, the Cronbach's α was 0.883.

(3). Hamilton Depression Rating Scale (HDRS-17, Hamilton 1960) is a 17-item scale and is scored between 0 and 4 points that measures the severity of depression symptoms during last two weeks. Scores from 0–7 are considered as being normal, 8–16 indicate mild depression, 17–23 are moderate depression, while scores over 24 are indicative of severe depression. The maximum score is 52. HDRS-17 is the most widely used psychological scale for depression in research and clinical practice. It has been translated into several languages. The HDRS has high internal consistency. It has demonstrated good reliability and internal consistency. In the current study, Cronbach's α was 0.849.

(4). General Anxiety Disorder (GAD-7, Spitzer et al. 1999) is a 7-item self-report questionnaire for screening and diagnosis of generalized anxiety disorder. The items are

rated on a 4-point Likert scale ranging from 0 “not at all” to 3 “nearly every day”. The total score ranged from 0 to 21, with a cut-off score of 9 (5 = mild; 10 = moderate; 15 = severe anxiety). In the current study, GAD-7 has shown good reliability and validity ($\alpha = 0.918$).

2.2. Analysis

Statistical analysis was performed using SPSS version 26. Descriptive statistics were applied to analyze demographic data and characteristics. Pearson’s correlation was used to investigate the association between anxiety, depression, DER, and ES. Associations between demographic variables (i.e., birth order, mother’s age, and marital status) and the dependent variables (anxiety, depression, ES, and DER) were assessed using analysis of variance (ANOVA), and associations between other variables (i.e., work status) and the dependent variables were assessed using a *t*-test. A multiple regression analysis test was applied to identify the prediction model between anxiety, depression, DER, and ES.

3. Results

3.1. Levels of Anxiety, Depression, DER, and ES

The findings of this study revealed that mothers of autistic children exhibited high levels of anxiety and depression. For anxiety, 34% had mild anxiety, 20.8% had moderate anxiety, and 29.6% had severe anxiety on the GAD-7. For depression, 27.5% of mothers suffered from mild depression, 26.4% suffered from moderate depression, and 35.2% suffered from severe depression on the HDRS-17.

With regard to DER, the analysis revealed that 37% of the mothers had a high level of DER, 16.4% had moderate difficulties, and 24.2% had a low level of DER on the DERS scale. With respect to the ES, the findings reported that 25.3% of the mothers reported a high level of emotional sensitivity, 25.3% had a moderate level, while 24.2% had a low level of ES on the ESS scale, as presented in Table 2.

Table 2. Level of anxiety, depression, DER, and ES.

Variables	N (%)	Mean	SD
Level of anxiety			
Mild	34%	10.47	5.77
Moderate	20.8%		
Severe	29.6%		
Level of Depression			
Mild	27.5%	19.79	9.32
Moderate	26.4%		
Severe	35.2%		
DER			
Low	(31) 34%	14.46	2.92
Moderate	(15) 16.4%		
High	(35) 37.3%		
ES			
Low	(23) 24.2%	84.86	22.74
Moderate	(23) 25.3%		
High	(23) 25.3%		

3.2. Demographic Data, Levels of Anxiety, Depression, DER, and ES

ANOVA analysis demonstrated no statistically significant effect of the demographic data on anxiety, depression, DER, and ES among mothers of autistic children. As illustrated in Table 3, there was no significant difference regarding the childbirth order and anxiety (0.628), depression (0.22), DER (0.719), and ES (0.565). Furthermore, there was no significant difference regarding marital status and anxiety (0.952), depression (0.540), DER (0.587), and ES (0.825). For mother’s education, there was no other significant impact on anxiety (0.545), depression (0.179), DER (0.168), and ES (.064). With respect to the mother’s age, the anxiety level was associated with age (0.03), but not with depression (0.06), DER (0.565), and ES (0.762). Table 3 summarizes the results of the ANOVA analysis.

Table 3. Demographic data and the level of anxiety, depression, DER, and ES for mothers of autistic children (N = 91).

Variables	Anxiety			Depression			DER			ES		
	Mean (SD)	<i>p</i> -Value	<i>F</i> -Statistic	Mean (SD)	<i>p</i> -Value	<i>F</i> -Statistic	Mean (SD)	<i>p</i> -Value	<i>F</i> -Statistic	Mean (SD)	<i>p</i> -Value	<i>F</i> -Statistic
Childbirth		0.628	0.467		0.222	1.53		0.719	0.331		0.565	0.575
First child (N = 51)	10.67 (5.9)			21.1 (9.5)			14.6 (3.1)			86.45 (23.2)		
Second child (N = 16)	11 (6.1)			16.56 (8.5)			14.6 (2.5)			79.44 (21.3)		
Third child (N = 24)	5.27 (1.1)			19.17 (9.2)			14 (2.9)			85.08 (23)		
Mother's Age		0.03	3.602		0.06	2.889		0.570	0.565		0.672	0.399
20–29 (N = 11)	–14.7 (4.6)			–15.18 (3.4)			–15.18 (3.45)			–90.64 (22.36)		
30–39 (N = 57)	–9.8 (5.9)			–14.49 (2.86)			–14.49 (2.86)			–84.11 (22.23)		
40–50 (N = 23)	–10 (5.1)			–14.04 (2.92)			–14.04 (2.86)			–83.96 (24.72)		
Marital Status		0.952	0.49		0.540	0.621		0.587	0.535		0.825	0.193
Married (83)	–10.4 (5.8)			–19.86 (9)			–14.54 (2.89)			–84.98 (22.6)		
Divorced (4)	–11.25 (7.4)			–22.75 (16.5)			–14.25 (4.1)			–88.5 (33.5)		
Widowed (4)	–10 (2.8)			–15.5 (9.3)			–13 (2.94)			–78.75 (18)		
Educational		0.545	0.61		0.179	1.75		0.168	1.819		0.064	2.84
Secondary (13)	–12 (5)			–24 (9.31)			–15.2 (2.4)			–98.5 (18.8)		
High Education (63)	–10.13(5.69)			–18.78 (9.02)			–14.08 (2.9)			–82.4 (21.9)		
Post-graduate (15)	–10.53 (5.77)			–20.4 (10.1)			–15.47 (2.9)			83.6 (6)		
										84.8 (22.7)		

The *t*-test analysis revealed that there was a statistically significant impact of work status on ES (0.027), which was significant at 0.05. However, the *t*-test analysis revealed no significant association between work status and anxiety (0.761), depression (0.850), and DER (0.93).

3.3. Relationship between Emotion Regulation, Anxiety, and Depression and ES

Pearson's correlations were calculated between the four measures. Statistically significant correlations were found between anxiety and depression ($r = 0.648, p = 0.01$), anxiety and ES ($r = 0.603, p = 0.01$), and anxiety and DER ($r = 0.496, p = 0.01$). Furthermore, a significant positive correlation was found between ES and depression ($r = 0.633, p = 0.01$) and ES and DER ($r = 0.420, p = 0.01$), as shown in Table 4.

Table 4. Pearson's correlation between anxiety, depression, ES, and DER (N = 91).

Variables	DER	ES	Depression
Anxiety	0.496	0.603	0.648
Depression	0.432	0.633	
ES	0.420		

3.4. Predicting Emotional Sensitivity from Anxiety, Depression, and Emotional Regulation

Multiple regression analysis was performed to assess anxiety, depression, and DER in an attempt to predict ES for mothers of autistic children. The results indicated that $R = 0.688$ and the coefficient R Square is (0.473), which means that the independent variables (anxiety and depression) explain 47.3% of the overall changes in ES for mothers of autistic children. Table 5 sets out the results for the prediction model of ES and anxiety, depression, and DER.

Table 5. Prediction analysis of ES as a mediator between mothers' anxiety, depression, and DER.

Regression	Beta	T	p-Value
Constant	44.265	5.964	0.000
Anxiety	1.153	2.733	0.008
Depression	0.971	3.840	0.000
DER	0.088	1.125	0.264

It is concluded that ES is directly related to anxiety and depression (ES increases with anxiety and depression severity). On the other hand, DER has no significant value of prediction, which means that DER is unable to predict ES among mothers of autistic children. The prediction equation is as follows:

$$ES = 44.265 \text{ (constant value)} + 1.153 \text{ (anxiety)} + 0.971 \text{ (depression)} \quad (1)$$

This equation indicates that the ES unit amount is affected if the anxiety score is increased by 1.153 and the depression score is increased by 0.971.

4. Discussion

The current study investigated the prevalence of anxiety, depression, DER, and ES among mothers of autistic children. Statistical analysis revealed that mothers of autistic children experienced high levels of anxiety, depression, and ES. In addition, the majority of these mothers had difficulties in emotional regulation. These findings are consistent with previous studies that reported that mothers of autistic children had higher prevalence rates of anxiety and depression (AlTourah et al. 2020; Miranda et al. 2019; Hou et al. 2018; Mohamed 2018; Al-Farsi et al. 2016; Kuusikko-Gauffin et al. 2013; Estes et al. 2013; Rezendes and Scarpa 2011).

The present study revealed that 34% of mothers of autistic children suffered from severe anxiety and 27.5% suffered from severe depression. These findings are consistent

with previous research that demonstrated a high prevalence of anxiety and depression among mothers of autistic children which was statistically evident in Arab countries (i.e., [Alghamdi et al. 2022](#); [AlTourah et al. 2020](#)). For example, a recent study in Saudi Arabia ([Alghamdi et al. 2022](#)) (applied DASS-21) reported severe levels of anxiety (35.7%) and severe depression (30.8%), and a study in Oman by [AlTourah et al. \(2020\)](#) reported 57.1% for depression and 49.2% for anxiety among mothers of autistic children.

With respect to demographic data, the present study found that all demographic factors were not significantly different. Mothers of autistic children are vulnerable and encountered to numerous stressful life events that affect their psychopathology. The current study's findings demonstrated that the impact of raising an autistic child on mothers is multifaceted, pervasive, and is not limited by the mother's age, education, employment, or marital status.

The findings reveal a significant relationship between anxiety, depression, DER, and ES among mothers of autistic children. This is expected as previous research has shown a significant relationship between anxiety, depression, and DER ([Gross and Jazaieri 2014](#); [Campbell-Sills and Barlow 2007](#); [Mennin et al. 2007](#); [Dennis 2007](#)).

Despite no previous study having evaluated the association between ES, DER, anxiety, and depression among mothers of autistic children, a significant relationship between ES and symptoms of anxiety and depression has already been demonstrated in various populations, such as, for example, in adults ([Shoeib 2021](#); [Innamorati et al. 2014](#); [Mennin et al. 2007](#); [Garnefski and Kraaij 2007](#)), adults with ASD ([Bruggink et al. 2016](#)), elder adults ([Sun et al. 2020](#)), and children ([Loevaas et al. 2018](#)). To the best of our knowledge, this is the first study to investigate correlations between anxiety, depression, ES, and DER in mothers of autistic children.

The findings demonstrate that high levels of anxiety and depression can predict high levels of ES in mothers of autistic children. This is consistent with previous research showing that anxiety and depression play a role in elevated ES ([Shoeib 2021](#); [Innamorati et al. 2014](#); [Guarino 2003](#)).

The significant relationship between ES and anxiety and depression was not surprising as prior research demonstrated this association between anxiety, depression, and ES ([Shoeib 2021](#); [Attwood et al. 2017](#); [Abd Hamza 2016](#)). The findings indicated that mothers who experience mental health disorders, such as depression and anxiety, may have difficulty with emotional regulation. This explains the excessive emotions of mothers of individuals with ASD due to their child's disability/behaviour ([Zhou et al. 2019](#); [Rezendes and Scarpa 2011](#)). Thus, mothers are expected to experience a high level of ES.

Limitation and Implication

This study has some limitations. The study included mothers of autistic children. Broader and more representative samples including fathers of autistic children warrant further investigation. Further research could replicate the study using a control group of parents of typically developing children to enhance the robustness of the findings. Further research is needed to investigate the relationship between comorbid mental health disorders in mothers of autistic children.

The study has implications for understanding the impact of anxiety and depression and the relative contribution to ES which is common in mothers of autistic children. The implication is that a subgroup of mothers of children with autism are more prone to experiencing anxiety, depression, ES, and DER, thus requiring special attention from clinicians and mental health professionals.

This study suggests that intervention and support for ES should include reducing anxiety/depression, improving ES, and building confidence and emotional regulation. Moreover, further research is needed to develop an intervention program for mothers to manage their emotions, stress, and anxiety.

Additionally, this study is among the first to investigate the relationship and the prediction of ES through its relationship with anxiety, depression, and DER in these mothers, which therefore has an impact on promoting mental health and well-being.

5. Conclusions

The primary aim of the study was to determine the potential relationship between anxiety, depression, DER, and ES. The findings of this study advanced our understanding of how ES is influenced by the most prevalent emotional problems (anxiety and depression) among mothers of autistic children. The results were clear about the unique role of depression and anxiety in predicting the risk of ES. These findings highlight the importance of screening for anxiety and depression in mothers of autistic children, not only to avoid elevated ES, but also to protect the mother's psychological well-being.

The current study sparks interest in additional literature that demonstrates the underlying relationship between mental health disorders and how they affect the parenting experience of mothers of autistic children. These findings emphasize the importance of parents' psychological health as this may contribute significantly to their children's psychological development and family well-being. Further, these findings can be used by researchers, clinicians, mental health providers, and policymakers to address the unique needs of parents caring for autistic children.

Author Contributions: All authors contributed equally to this research. Conceptualization, E.G. and A.S.; methodology, E.G. and A.S.; validation, E.G. and A.S.; formal analysis, A.S.; data curation and writing—original draft preparation, E.G.; writing—review and editing, E.G. and A.S. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Informed consent for publication is not applicable.

Data Availability Statement: Not applicable.

Acknowledgments: The authors would like to express their gratitude to the study participants who shared their experiences and emotions.

Conflicts of Interest: The authors declare no conflict of interest.

References

- Abd Hamza, Emad. 2016. Emotional Sensitivity among University Students and the Effectiveness of Counselling by Misconception Hypothesis (Raimy) in Reducing Hypersensitivity Negative. Available online: <https://www.researchgate.net/publication/321587924> (accessed on 15 February 2021).
- Aldao, Amelia, Susan Nolen-Hoeksema, and Susanne Schweizer. 2010. Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review* 30: 217–37. [CrossRef] [PubMed]
- Al-Farsi, Omar A., Yahya M. Al-Farsi, Marwan M. Al-Sharbati, and Samir Al-Adawi. 2016. Stress, anxiety, and depression among parents of children with autism spectrum disorder in Oman: A case-control study. *Neuropsychiatric Disease and Treatment* 12: 1943–951. [CrossRef] [PubMed]
- Al-Oran, Hythiem Mohammad, and Ahmad Yahya AL-Sagarat. 2016. Parenting Stress of Children with Autistic Disorder. *Open Access Library Journal* 3: 1–10. [CrossRef]
- AlTourah, Abdulrahman J., Ahmed Malalla Al Ansari, and Haitham Ali Jahrami. 2020. Depression, Anxiety and Stress among Mothers of Children with Autism Spectrum Disorder. *Bahrain Medical Bulletin* 42: 125–28.
- Alghamdi, Khaled, Shahad Alahmadi, Abeer Sayedahmad, and Hanan Mosleh. 2022. Psychological well-being of mothers of children with autism in Saudi Arabia. *Cureus* 14: e23284. [CrossRef]
- APA—American Psychiatric Association. 2013. *Diagnostic and Statistical Manual of Mental Disorders–5 (DSM-5)*. Washington, DC: American Psychiatric Association.
- Attwood, Angela S., Kayleigh E. Easey, Michael N. Dalili, Andrew L. Skinner, Andy Woods, Lana Crick, Elizabeth Ilett, Ian S. Penton-Voak, and Marcus R. Munafò. 2017. State anxiety and emotional face recognition in healthy volunteers. *Royal Society Open Science* 4: 160855. [CrossRef]
- Berenbaum, Howard, Chitra Raghavan, Huynh-Nhu Le, Laura L. Vernon, and Jose J. Gomez. 2003. A taxonomy of emotional disturbances. *Clinical Psychology: Science and Practice* 10: 206–226. [CrossRef]

- Blacher, Jan, and Laura Lee McIntyre. 2006. Syndrome specificity and behavioural disorders in young adults with intellectual disability: Cultural differences in family impact. *Journal of Intellectual Disability Research* 50: 184–98. [CrossRef]
- Bradley, Bekh, Jared A. DeFife, Clifford Guarnaccia, Justine Phifer, Negar Fani, Kerry J. Ressler, and Drew Westen. 2011. Emotion dysregulation and negative affect: Association with psychiatric symptoms. *The Journal of Clinical Psychiatry* 72: 685–91. [CrossRef]
- Bruggink, A., S. Huisman, R. Vuijk, V. Kraaij, and N. Garnefski. 2016. Cognitive emotional regulation, anxiety and depression in adults with autism spectrum disorder. *Research in Autism Spectrum Disorders* 22: 34–44. [CrossRef]
- Bujnowska, Anna M., Celestino Rodríguez, Trinidad García, Débora Areces, and Nigel V. Marsh. 2019. Parenting and Future Anxiety: The Impact of Having a Child with Developmental Disabilities. *International Journal of Environmental Research and Public Health* 16: 668. [CrossRef] [PubMed]
- Campbell-Sills, Laura, and David H. Barlow. 2007. Incorporating emotion regulation into conceptualizations and treatments of anxiety and mood disorders. In *Handbook of Emotion Regulation*. Edited by J. J. Gross. New York: Guilford Press, pp. 542–59.
- CDC—Centers for Disease Control and Prevention. 2020. *Prevalence of Autism Spectrum Disorders among Children Aged 8 Years: Autism and Developmental Disabilities Monitoring Network*. 11 Sites, United States, 2016. MMWR Surveillance Summaries. Available online: https://www.cdc.gov/mmwr/volumes/69/ss/ss6904a1.htm?s_cid=ss6904a1_w (accessed on 12 June 2021).
- Cole, Pamela M., Sarah E. Martin, and Tracy A. Dennis. 2004. Emotion regulation as a scientific construct: Methodological challenges and directions for child development research. *Child Development* 75: 317–33. [CrossRef] [PubMed]
- Dennis, Tracy A. 2007. Interactions between emotion regulation strategies and affective style. Implications for trait anxiety versus depressed mood. *Motivation and Emotion* 31: 200–07. [CrossRef]
- Duarte, Cristiane S., Isabel A. Bordin, Latife Yazigi, and Julia Mooney. 2005. Factors associated with stress in mothers of children with autism. *Autism* 9: 416–27. [CrossRef] [PubMed]
- Dvir, Yael, Julian D. Ford, Michael Hill, and Jean A. Frazier. 2014. Childhood maltreatment, emotional dysregulation, and psychiatric comorbidities. *Harvard Review of Psychiatry* 22: 149–61. [CrossRef]
- ElDib, A. 2016. Psychological Stresses and the Needs of Mothers of Children with Autism Spectrum Disorder, and the Relationship between Them in the United Arab Emirates. Electronic Theses and Dissertations. Available online: https://scholarworks.uaeu.ac.ae/all_theses/341 (accessed on 25 May 2021).
- Eisenhower, Abbey S., Bruce L. Baker, and Jan Blacher. 2005. Preschool children with intellectual disability: Syndrome specificity, behaviour problems, and maternal well-being. *Journal of Intellectual Disability Research* 49: 657–71. [CrossRef]
- Estes, Annette, Erin Olson, Katherine Sullivan, Jessica Greenson, Jamie Winter, Geraldine Dawson, and Jeffrey Munson. 2013. Parenting-related stress and psychological distress in mothers of toddlers with autism spectrum disorders. *Brain and Development* 35: 133–38. [CrossRef]
- Garnefski, Nadia, and Vivian Kraaij. 2007. The Cognitive Emotion Regulation Questionnaire—Psychometric features and prospective relationships with depression and anxiety in adults. *European Journal of Psychological Assessment* 23: 141–49. [CrossRef]
- Gobrial, E. 2018. The Lived experiences of mothers of children with the autism spectrum disorders in Egypt. *Social Science* 7: 133. [CrossRef]
- Gratz, Kim L., and Lizabeth Roemer. 2004. Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the Difficulties in Emotion Regulation Scale. *Journal of Psychopathology and Behavioral Assessment* 26: 41–54. [CrossRef]
- Gratz, Kim L., Matthew T. Tull, David E. Baruch, Marina A. Bornoalova, and C. W. Lejuez. 2008. Factors associated with co-occurring borderline personality disorder among inner-city substance users: The roles of childhood maltreatment, negative affect intensity/reactivity, and emotion dysregulation. *Comprehensive Psychiatry* 49: 603–15. [CrossRef]
- Gross, James J. 1998. The emerging field of emotion regulation: An integrative review. *Review of General Psychology* 2: 271–99. [CrossRef]
- Gross, James J., and Hooria Jazaieri. 2014. Emotion, Emotion Regulation, and Psychopathology: An Affective Science Perspective. *Clinical Psychological Science* 2: 387–401. [CrossRef]
- Gross, James J., and Oliver P. John. 2003. Individual differences in two emotion regulation processes: Implications for affect, relationships, and wellbeing. *Journal of Personality and Social Psychology* 85: 348–62. [CrossRef] [PubMed]
- Guarino, R. 2003. Emotional sensitivity: A new measure of emotional lability and its moderating role in the stress-illness relationship. Unpublished Ph.D. thesis, Department of Psychology, University of York, York, UK.
- Hamilton, M. 1960. A rating scale for depression. *Journal of Neurology, Neurosurgery, and Psychiatry* 23: 56–62. [CrossRef] [PubMed]
- Hickey, Emily J., Robert L. Nix, and Sigan L. Hartley. 2019. Family Emotional Climate and Children with Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders* 49: 3244–256. [CrossRef] [PubMed]
- Hou, Yuh-Ming, Lydia Stewart, Lai-Sang Iao, and Chin-Chin Wu. 2018. Parenting stress and depressive symptoms in Taiwanese mothers of young children with autism spectrum disorder: Association with children's behavioural problems. *Journal of Applied Research in Intellectual Disabilities* 31: 1113–121. [CrossRef] [PubMed]
- Innamorati, Marco, Michela Balsamo, Beth Fairfield, Mariantonietta Fabbriatore, Antonino Tamburello, and Aristide Saggino. 2014. Construct Validity and Reliability of the Adult Rejection Sensitivity Questionnaire: A Comparison of Three Factor Models. *Depression Research and Treatment* 2014: 972424. [CrossRef]
- Kim, Pilyoung, Gary W. Evans, Michael Angstadt, S. Shaun Ho, Chandra S. Sripada, James E. Swain, Israel Liberzon, and K. Luan Phan. 2013. Effects of childhood poverty and chronic stress on emotion regulatory brain function in adulthood. *Proceedings of the National Academy of Sciences of the United States of America* 110: 18442–8447. [CrossRef]

- Kraines, Morganne A., Lucas J. A. Kelberer, and Tony T. Wells. 2018. Rejection sensitivity, interpersonal rejection, and attention for emotional facial expressions. *Journal of Behavior Therapy and Experimental Psychiatry* 59: 31–39. [\[CrossRef\]](#)
- Kring, Ann M. 2008. Emotion disturbances as transdiagnostic processes in psychopathology. In *Handbook of Emotion*. Edited by M. Lewis, J. Haviland-Jones and L. F. Barrett. New York: Guilford Press, pp. 691–705.
- Kuusikko-Gauffin, Sanna, Rachel Pollock-Wurman, Marja-Leena Mattila, Katja Jussila, Hanna Ebeling, David Pauls, and Irma Moilanen. 2013. Social anxiety in parents of high-functioning children with autism and Asperger syndrome. *Journal of Autism and Developmental Disorders* 43: 521–29. [\[CrossRef\]](#) [\[PubMed\]](#)
- Li, Meng, Binxia Fu, Jing Ma, Hanlu Yu, and Liying Bai. 2021. Sensitivity and emotional intelligence: An empirical study with mental health as a regulating variable. *Current Psychology* 40: 2581–589. [\[CrossRef\]](#)
- Loevaas, Mona Elisabeth S., Anne Mari Sund, Joshua Patras, K. Martinsen, Odin Hjemdal, S.-P. Neumer, Solveig Holen, and Trude Reinfiell. 2018. Emotion regulation and its relation to symptoms of anxiety and depression in children aged 8–12 years: Does parental gender play a differentiating role? *BMC Psychology* 6: 42. [\[CrossRef\]](#) [\[PubMed\]](#)
- Lovell, Brian, and Mark A. Wetherell. 2020. Exploring the Moderating Role of Benefit Finding on the Relationship Between Child Problematic Behaviours and Psychological Distress in Caregivers of Children with ASD. *Journal of Autism and Developmental Disorders* 50: 617–24. [\[CrossRef\]](#)
- McStay, Rebecca L., Cheryl Dissanayake, Anke Scheeren, Hans M. Koot, and Sander Begeer. 2014. Parenting stress and autism: The role of age, autism severity, quality of life and problem behaviour of children and adolescents with autism. *Autism: The International Journal of Research and Practice* 18: 502–10. [\[CrossRef\]](#)
- Mennin, Douglas, and Frank Farach. 2007. Emotion and evolving treatments for adult psychopathology. *Clinical Psychology: Science and Practice* 14: 329–52. [\[CrossRef\]](#)
- Mennin, Douglas S., Robert M. Holaway, David M. Fresco, Michael T. Moore, and Richard G. Heimberg. 2007. Delineating components of emotion and its dysregulation in anxiety and mood psychopathology. *Behavior Therapy* 38: 284–302. [\[CrossRef\]](#)
- Miranda, Ana, Alvaro Mira, Carmen Berenguer, Belen Rosello, and Inmaculada Baixauli. 2019. Stress in Mothers of Children with Autism Without Intellectual Disability. Mediation of Behavioral Problems and Coping Strategies. *Frontiers in Psychology* 10: 464. [\[CrossRef\]](#)
- Mohamed, Mawaheb. 2018. Depression of the Autistic children's mothers in the light of some variables. *Arab Journal of Sciences and Research Publishing* 9: 83–108. [\[CrossRef\]](#)
- Nolen-Hoeksema, Susan. 2012. Emotion regulation and psychopathology: The role of gender. *Annual Review of Clinical Psychology* 8: 161–87. [\[CrossRef\]](#)
- Orgeta, Vasiliki. 2009. Specificity of age differences in emotion regulation. *Aging Mental Health* 13: 818–26. [\[CrossRef\]](#) [\[PubMed\]](#)
- Öz, Büşra, Tuğba Yüksel, and Serhat Nasiroğlu. 2020. Depression-Anxiety Symptoms and Stigma Perception in Mothers of Children with Autism Spectrum Disorder. *Noro Psikiyatri Arsivi* 57: 50–55. [\[CrossRef\]](#)
- Pisula, Ewa. 2014. Parenting Stress in Mothers and Fathers of Children with Autism Spectrum Disorders. *A Comprehensive Book on Autism Spectrum Disorders* 5: 87–106. [\[CrossRef\]](#)
- Rezendes, Debra L., and Angela Scarpa. 2011. Associations between Parental Anxiety/Depression and Child Behavior Problems Related to Autism Spectrum Disorders: The Roles of Parenting Stress and Parenting Self-Efficacy. *Autism Research and Treatment* 2011: 395190. [\[CrossRef\]](#) [\[PubMed\]](#)
- Rodriguez, Geovanna, Sigan L. Hartley, and Daniel Bolt. 2019. Transactional Relations Between Parenting Stress and Child Autism Symptoms and Behavior Problems. *Journal of Autism and Developmental Disorders* 49: 1887–898. [\[CrossRef\]](#)
- Schieve, Laura A., Stephen J. Blumberg, Catherine Rice, Susanna N. Visser, and Coleen Boyle. 2007. The relationship between autism and parenting stress. *Pediatrics* 119: S114–21. [\[CrossRef\]](#)
- Shoeib, A. 2021. The relative contribution of emotional sensitivity, anxiety and depression in forecasting quality of life of university students. *International Journal of Research in Educational Sciences* 4: 71–130. [\[CrossRef\]](#)
- Spitzer, Robert L., Kurt Kroenke, and Janet B. W. Williams. 1999. Validation and utility of a self-report version of PRIME-MD: The PHQ primary care study. Primary Care Evaluation of Mental Disorders. Patient Health Questionnaire. *JAMA* 282: 1737–744. [\[CrossRef\]](#)
- Sun, Junjun, Yanyan Luo, Hongjuan Chang, Ruiqin Zhang, Rui Liu, Yuanyuan Jiang, and Huifang Xi. 2020. The Mediating Role of Cognitive Emotion Regulation in BIS/BAS Sensitivities, Depression, and Anxiety Among Community-Dwelling Older Adults in China. *Psychology Research and Behavior Management* 13: 939–48. [\[CrossRef\]](#)
- Thompson, Ross A. 1994. Emotion regulation: A theme in search of definition. *Monographs of the Society for Research in Child Development* 59: 25–52. [\[CrossRef\]](#)
- Totsika, Vasiliki, Richard P. Hastings, Eric Emerson, Gillian A. Lancaster, and Damon M. Berridge. 2011. A population-based investigation of behavioural and emotional problems and maternal mental health: Associations with autism spectrum disorder and intellectual disability. *Journal of Child Psychology and Psychiatry, and Allied Disciplines* 52: 91–99. [\[CrossRef\]](#) [\[PubMed\]](#)
- Wall, Kiana, Allison Kalpakci, Karyn Hall, Nicholas Crist, and Carla Sharp. 2018. An evaluation of the construct of emotional sensitivity from the perspective of emotionally sensitive people. *Bord Personal Disord Emot Dysregul* 5: 14. [\[CrossRef\]](#) [\[PubMed\]](#)

- Weiss, Jonathan A., Kendra Thomson, and Lisa Chan. 2014. A systematic literature review of emotion regulation measurement in individuals with autism spectrum disorder. *Autism Research* 7: 629–48. [[CrossRef](#)] [[PubMed](#)]
- Zhou, Wensu, Dan Liu, Xiyue Xiong, and Huilan Xu. 2019. Emotional problems in mothers of autistic children and their correlation with socioeconomic status and the children's core symptoms. *Medicine* 98: e16794. [[CrossRef](#)] [[PubMed](#)]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.