AMERICAN UNIVERSITY OF BEIRUT

AN EXAMINATION OF MATERNAL PERCEPTIONS OF FACTORS AFFECTING PSYCHOLOGICAL ADJUSTMENT OF SIBLINGS OF CHILDREN WITH AUTISM IN LEBANON

by
STEPHANIE DANIEL SROUR

A thesis
submitted in partial fulfillment of the requirements
for the degree of Master of Arts
to the Department of Psychology
of the Faculty of Arts and Sciences
at the American University of Beirut

Beirut, Lebanon
April 2016

AMERICAN UNIVERSITY OF BEIRUT

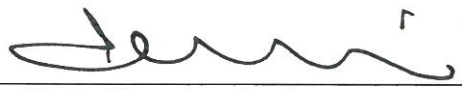
AN EXAMINATION OF MATERNAL PERCEPTIONS OF FACTORS AFFECTING PSYCHOLOGICAL ADJUSTMENT OF SIBLINGS OF CHILDREN WITH AUTISM IN LEBANON

by

STEPHANIE DANIEL SROUR

Approved by:

Dr. Nidal Daou, Assistant Professor — Advisor
Department of Psychology



Dr. Shahe Kazarian, Professor — Member of Committee
Department of Psychology

Dr. Leila Dirani, Associate Professor — Member of Committee
Department of Psychiatry

Date of thesis defense: April 25, 2016

AMERICAN UNIVERSITY OF BEIRUT

THESIS, DISSERTATION, PROJECT RELEASE FORM

Student Name: _____
Last First Middle

◯ Master's Thesis ◯ Master's Project ◯ Doctoral Dissertation

☐ I authorize the American University of Beirut to: (a) reproduce hard or electronic copies of my thesis, dissertation, or project; (b) include such copies in the archives and digital repositories of the University; and (c) make freely available such copies to third parties for research or educational purposes.

☐ I authorize the American University of Beirut, **three years after the date of submitting my thesis, dissertation, or project,** to: (a) reproduce hard or electronic copies of it; (b) include such copies in the archives and digital repositories of the University; and (c) make freely available such copies to third parties for research or educational purposes.

_____

Signature Date

ACKNOWLEDGMENTS

To begin with, I would first like to thank my thesis advisor, Dr. Nidal Daou for all the guidance and support she provided me with throughout the whole process. Thank you Dr. Nidal for all your efforts, motivation and emotional support; it wouldn't have been the same without you. Dr. Daou was always there for me whenever I had thesis related problems. Despite the fact that she has many other duties, Dr. Daou was always patient, alert to my concerns, responded promptly to my questions, and overall always comforting and encouraging me to move forward. Thank you for pointing out my mistakes and always giving alternatives that would best suit my thesis. A special thank you to my committee members: Dr. Kazarian, Dr. Dirani and Dr. Slobedenyouk. Thank you for your valuable feedback; your input definitely that made my thesis better.

I would also like to thank my family: Mom, Dad, Cynthia, Eddy and Dany. Despite the fact that you are far away, your encouraging messages and continuous motivation got me here. Even though we are miles apart, your support is irreplaceable. It wouldn't have been the same without you. Thank you for everything. I am very grateful to have you in my life. A special thanks to my fiancé, Georges Dib. Thank you for being there for me through it all. Thank you for listening and being patient with me even when I nag and especially through my mood swings. Thank you for you continuous support and constant encouragement. A warm thank you to my colleague Shereen Eid. We finally made it! We have been through a lot together. You were my companion throughout these three years. Thanks for all the support. Thank you for being there whenever I needed support. It wouldn't have been the same without you. After all, we have many memories to look back on and hopefully our friendship will continue beyond this phase of our lives. I wish you the best of luck in Dubai. You will definitely be missed. I would also like to thank Reem Hmaidan for all the assistance she provided me with. You saved me! Thank you for always answering my silliest questions. I wish you the best of luck with whatever plans you have for the future. I would also like to thank Mrs. Arwa Halawi, Sanay Hamiyeh, Lara Zaarour, Joelle Sabra, other behavioral therapists, all schools, NGOs and counselors for assisting me through the data collection phase. This study wouldn't have been possible without their assistance.

Thank you all,
Stephanie D. Srour

AN ABSTRACT OF THE THESIS OF

Stephanie Daniel Srour for Master of Arts
Major: Clinical Psychology

Title: An Examination of Maternal Perceptions of Factors Affecting Psychological Adjustment in Siblings of Children with Autism in Lebanon

With the continually increasing prevalence of Autism Spectrum Disorder (ASD), the likelihood of having a sibling with an ASD diagnosis is also increasing. The present study was concerned with maternal perceptions of sibling psychological adjustment. The psychological adjustment of siblings of children with ASD has been examined in relation to several variables in the literature; with the most salient being symptom severity, sibling differential parenting, and parental satisfaction.

The study aimed to examine (a) maternal perceptions of these salient factors, specifically assessing the extent to which they affect psychological adjustment in siblings of children with ASD in Lebanon; (b) the correlation between demographic variables – birth order, gender, family income, mother's educational level, and family size – and sibling adjustment; and (c) the extent to which siblings of children with ASD differ from siblings of typically developing children in terms of their psychological adjustment. There is an absence of research on the psychological adjustment of siblings of children with ASD in Lebanon, thus making this study a first of its kind in the country.

A total of 70 Lebanese mothers of children with ASD completed the Arabic version of the Indian Scale for Assessment of Autism, Sibling Inventory of Differential Experience, the Parenting Sense of Competence Scale, the Strengths and Difficulties Questionnaire, and a demographics questionnaire. Symptom severity, parental satisfaction and sibling differential parenting were significant predictors of sibling psychological adjustment. When partialling for the effects of the demographic variables, symptom severity was no longer a significant predictor. Family size and Family income were two significant demographics .A total of 68 Lebanese mothers of children who are typically developing completed the Arabic version of Sibling Inventory of Differential Experience, the Parenting Sense of Competence Scale, the Strengths and Difficulties Questionnaire and the demographics questionnaire. There were no differences between the two groups on the outcome variable. The implications of the findings of the study are discussed.

Keywords: psychological adjustment, symptom severity, autism, siblings.

CONTENTS

TABLES

FIGURES

An Examination of Maternal Perceptions of Factors Affecting Psychological Adjustment in Siblings of Children with Autism in Lebanon

CHAPTER I

INTRODUCTION TO AUTISM SPECTRUM DISORDER

According to the DSM-5 (American Psychiatric Association, APA, 2013), Autism Spectrum Disorder (ASD) is a neuro-developmental disorder that is characterized by deficits in social functioning and restricted interest in behaviors and activities. Social deficits include difficulties in social communication, social reciprocity, and in social interactions. ASD falls on a dimensional spectrum, with varying degrees of symptom severity. During the second year of life, the features of ASD become evident; however, symptoms might be present earlier on (APA, 2013). ASD has been more prevalent in boys; it has been diagnosed four times more in males compared to females (APA, 2013). ASD has heritability estimates that range from 37% to 90%. In addition, 15% of cases have been shown to have some genetic mutation (APA, 2013).

The prevalence of ASD has risen to 1 in 68 children in 2010 in multiple states within the United States (Centers for Disease Control and Prevention, CDC, 2014). Elsabbagh and colleagues (2012) indicated that some of the reasons of the increase in prevalence are due to the widening of the diagnostic concepts of ASD, awareness of ASD, as well as service availability for individuals with ASD.

ASD impedes the development of an individual in terms of educational, occupational and social functioning. As ASD does not allow the normal functioning of the individual, the family plays an imperative role in supporting the individual with ASD. It has been evidenced that families with a child with ASD tend to experience a greater amount of stress than those families with a child who have other disabilities (Bebko, Konstantareas & Springer, 1987). Since the prevalence of ASD is increasing, it is important to examine the influence of the

difficulties that ASD has on the family. This increase in prevalence indicates that more typically developing[1] children are having a sibling with an ASD diagnosis. The sibling relationship is an important dimension during development (Abrams, 2009). Therefore, it is important to understand precisely how these typically developing siblings (e.g., Brewton, Nowell, Lasala & Goin-Kochel, 2012; Griffith, Hastings & Petalas, 2014; Rivers & Stoneman, 2008) are influenced by the atypical development of the child with ASD.

[1] A search was conducted using the search engine "Google Scholar" and the term "children with autism" to decide on the term that will be used to describe the comparison group. The search was limited to articles published in the journals "Research in Autism Spectrum Disorder" and "Journal of Autism and Developmental Disorders" between the years 2010 and 2015. The results of this search yielded about 111,000 results (more than 50 pages). Looking the first 50 pages of the results, 49 studies used comparison groups. 27 of these studies used the term "typically developing" to name their control group. 6 of these studies used other variants such as " non-diagnosed siblings (Rozga, et al., 2012)", "unaffected siblings" (Melnyc, et al., 2012), "normal children" (Chan, et al., 2011),"control subjects" (Hilton et al., 2010), and "without autism" (De Pauw, Mervielde, Van Leeuwen, & De Clercq, 2011). 20 of these studies had a different type of comparison group and some of which had an additional control group to the other comparison group. 4 of these studies had an additional control group. 3 of the studies used the term "typically developing"(Chaidez, Hansen, Hertz-Picciotto, 2014; Diehl, & Paul, 2012; Mayes, Calhoun, Murray, Ahuja, Smith, 2011;). while only one used the term "without a disability" (Pan, 2011). In addition, looking at all the studies reviewed in this paper, 3 studies used a control group. All 3 studies used the term normally/typically developing to describe the control group. (Kaminsky & Dewey, 2002; Tomeny, Barry & Bader, 2012; Verte, Roeyers & Buysse, 2003). The term "without autism" cannot be used in this study because it implies that the participant might have another disorder or disability which is beyond the scope of this study to look at. The term "control subject" will not be used as it is not descriptive enough of the comparison group.

CHAPTER II

PSYCHOLOGICAL ADJUSTMENT OF SIBLINGS OF CHILDREN WITH ASD

A. Findings on the Psychological Adjustment of Siblings of Children with ASD

Psychological adjustment in the context of siblings of children with ASD refers to the emotional and behavioral well-being of the sibling. Research concerned with the psychological adjustment of siblings of children with ASD has yielded mixed results. Whereas some children have reported being positively influenced by their experience of having a sibling with ASD (e.g., Dempsey, Llorens, Brewton, Mulchandani & Goin-Kochel, 2012), others have reported negative experiences (e.g., Barak-Levy, Goldstein, & Weinstock, 2010; Griffith, Hastings & Petalas, 2014; Meyer, Ingersoll, & Hambrick, 2011) and some had scores similar to the normal population (e.g., Brewton et al., 2012; Tomeny, Barry & Bader, 2012).

Concerning studies that indicated a positive influence on the siblings, Dempsey et al. (2012) found siblings of children with ASD to have better emotional functioning scores when compared to the standardization sample of the Child Behavioral Checklist. The authors indicated that this could be explained by the maturity experienced by siblings of children with ASD. Verte, Roeyers and Buysse (2003) compared the adjustment of siblings of children with ASD to that of siblings of typically developing children. Participants in both groups were matched on age, gender, birth order, age spacing, family size, and the sibling age and gender. The age of all children was between 6 and 16 years old. The results indicated that sisters of children with ASD between the ages of 12 and 16 had a more positive self-concept and better social competence compared to sisters of the control group. Verte et al. (2003) explained that as

the children with ASD received professional support and help, their sisters' responsibilities were reduced. As a result, the sisters were better able to adapt and hence, develop better competencies.

Several studies found that there were in fact similar levels of adjustment between the normative sample and siblings of children with ASD. For example, Brewton et al. (2012) indicated that siblings of children with ASD not only had a normal adaptive functioning, but also served as role models for the child with ASD. Similarly, Tomeny et al. (2012) explained that siblings of children with ASD were not at a higher risk of maladjustment when compared to a control group. Tomeny et al. drew comparisons between healthy siblings of children with ASD and a control group of 42 typically developing children aged between 6 and 18 years. Their results indicated that irrespective of whether there was an ASD diagnosis or not (i.e., regardless of group membership), when a child had internalizing problems (i.e., symptoms of anxiety, symptoms of depression, and somatic complaints) so did his or her sibling – i.e., the sibling, too, was observed to be at a higher risk of having internalizing problems – *and* social problems (e.g., peer victimization, peer rejection, bullying, etc). Tomeny et al., concluded that having a sibling with ASD was *neither* a risk factor *nor* a protective factor as far as sibling psychological adjustment.

Consistent with the findings reported by Brewton et al. (2012) and Tomeny et al. (2012), Hastings and Petalas (2013) compared the psychological adjustment of siblings of children with ASD to the normative British data of the Strengths and Difficulties questionnaire (SDQ). In addition, they examined the extent to which sibling adjustment was related to maternal depression and the behavioral problems of the child with ASD. Siblings reported on their relationship with the child with ASD; and those of them who were above the age of 11, also

reported on their behavioral and emotional symptoms. The mothers reported on their own symptoms and the behavioral problems of the child with ASD. The results indicated that sibling emotional and behavioral problems were *slightly* more elevated than those of the normative sample, but those differences were *not significant*. Still, Hastings and Petalas (2013) warned against interpreting those results to mean that siblings were unaffected by the well-being of their brother/sister or their mother. They indicated that the study did not take into account all areas of functioning of the siblings. Hence, those areas that were not considered might have been impaired as a result of the atypical development of the child with ASD and/or maternal wellbeing.

There were some elevated scores that were observed in the sibling relationships and difficulties with peers, however. Hastings and Petalas (2013) explained that siblings in middle childhood and adolescence (7-17 years of age) felt that their brother or sister with ASD embarrassed them in front of their peers, who in turn lacked empathy. Hence, the siblings were exposed to additional problems with their peers. The authors added that increased behavioral problems in the child with ASD influenced the relationship between the siblings. With increased behavioral problems, siblings experienced more conflict and less warmth and closeness. Nevertheless, the researchers found that the adjustment of the sibling was not associated with maternal depression (Hastings & Petalas, 2013).

B. Perspectives on the Psychological Adjustment of Siblings of Children with ASD

An important aspect that has been examined in the context of psychological adjustment of siblings of children with ASD is the comparison between the perspective of the sibling and the perspectives of the parents regarding the sibling adjustment. Barak-Levy et al. (2010) compared the views of parents and siblings on the psychological adjustment of the siblings. The results

demonstrated that both reporters indicated that the siblings were helpful to the parents and held important responsibilities to the family as a whole. The parents perceived this finding as positive. The authors, however, indicated that the fact that siblings were supportive of and helpful to their parents might have been a source of distress for them – the siblings. Barak-Levy et al. explained that reports based on views of parents might be distorted regarding the adjustment of siblings of children with ASD. Compared to that of a child with ASD, the distress and maladjustment of the typically developing sibling might not be obvious to the mothers reporting the psychological adjustment of her typically developing child (Barak-Levy et al.). The siblings were also compared to a control group that consisted of 27 siblings of typically developing children who were matched for age and gender. The findings revealed that siblings of children with ASD participated in fewer extracurricular activities compared to siblings of typically developing children.

Because most research concerned with sibling adjustment in the context of ASD has been based on maternal reports, Griffith et al. (2014) examined the extent to which fathers and mothers agreed on the psychological adjustment of the siblings. The researchers compared the adjustment of siblings of children with ASD as reported by each parent separately to a normative data of the SDQ which included 10,298 children aged between 5–15 years in Great Britain; they also compared the reports of each parent on the adjustment of the sibling of a child with ASD. Compared the normative data, both sets of parents reported that siblings had more emotional problems and lower pro-social behavior. Mothers of children with ASD, however, reported more overall adjustment but higher conduct problems compared to the normative sample. The results indicated that inter-rater agreement of fathers and mothers was moderately positively correlated (Griffith et al.). Therefore, siblings of children with ASD seemed to have

certain adjustment problems, irrespective of whose report was used for the assessment. The results demonstrated that there is a low probability risk for adjustment problems in siblings of children with ASD when compared to the normative data. This risk, however, is close to the clinical range of significant adjustment problems (Griffith et al., 2014). Although siblings of children with ASD might not be at an increased risk, their vulnerability to adjustment problems as a result of a continuous stressor in their life might require special considerations or reinforced parental attention.

CHAPTER III

FACTORS ASSOCIATED WITH PSYCHOLOGICAL ADJUSTMENT OF SIBLINGS OF CHILDREN WITH ASD

The psychological adjustment of siblings of children with ASD has been predicted by different variables, including aspects of parental functioning, characteristics of the child with ASD, and characteristics of the sibling. The following sections take a closer look at the salient predictors of psychological adjustment in siblings, namely sibling differential parenting, parental satisfaction and involvement in education and intervention, and symptom severity.

A. Sibling Differential Parenting

Sibling differential parenting, which is the comparison of parental treatment of two or more of their children, has been known to influence children's *external problem behaviors* in the general population. External problem behaviors pertain to "uninhibited behavior and related expressions of under-socialization in which negative emotions are directed against others and manifested as anger, aggression or frustration" (Roeser, Eccles, & Strobel, 1998, cited in Meunier, Stievenart, van de Moortele, Browne, & Kumar, 2011, p. 20). Meunier et al. (2011) pointed out that disfavored children have worse trajectories of externalizing problem behaviors. Therefore, when a child perceived that his or her parents were not providing him or her with equal level of parenting, the child's externalizing problems worsened.

Sibling differential parenting has been evidenced in families that have a child with a disability. Corter, Pepler, Stanhope and Abramovitch (1992) observed interactions between mothers, siblings and children with Down Syndrome. Compared to the interactions with the typically developing siblings, mothers interacted more positively and showed better reciprocity with the child with Down Syndrome.

Similarly, McHale and Pawletko (1987) examined sibling differential parenting in families with children with disabilities and families with children of typical development. Greater sibling differential parenting was evidenced in families with children with disabilities compared to the control families. Sibling differential parenting was correlated with the adjustment of the child and the relationship between the siblings. Increased sibling differential parenting was correlated with decreased sibling psychological adjustment and reduced quality relationship between the siblings. The researchers indicated that sibling differential parenting occurred because the child with a disability requires care that is not congruent with his/her chronological age. McHale and Pawletko (1987) explained that even though the siblings may understand that the differential parenting is legitimate, they may still experience some negative emotions.

According to Rivers and Stoneman (2008), sibling differential parenting is evidenced within families that have a child with ASD. The parents seem to provide the child with ASD with more care and attention.. Rivers and Stoneman (2008), however, explained that sibling satisfaction with differential parenting was important in predicting sibling adjustment. They explained that sibling differential parenting might not be problematic when children understand its rationale and perceive it as fair. Even though perceived fairness might moderate the relationship between sibling differential parenting and psychological adjustment, a direct relationship between sibling psychological adjustment and differential parenting was still evidenced (Kowal, Kramer, Krull & Crick, 2002). Rivers and Stoneman (2008) pointed out that sibling *dissatisfaction* with differential parenting was predictive of reduced quality in the sibling relationship. Another finding indicated that there was an association between persistence

(temperament trait) in the siblings and level of sibling's differential parenting, whereby the greater the differential parenting, the lower the persistence of the sibling.

B. Parental Sense of Satisfaction and Parental Involvement in Education and Interventions

According to Johnston and Mash (1989), parental satisfaction is "an affective dimension of parenting, reflecting the degree to which the parent feels frustrated, anxious and poorly motivated in the parenting role" (p.174). Therefore, when parents feel overwhelmed in their role of taking care of their child they might report less parental satisfaction. *Parental competence* has been measured in terms of *parental satisfaction* in parenting and *parental self-efficacy*. Hesse, et al. (2013) showed that parental self-efficacy was not a significant predictor of sibling adjustment. Parental satisfaction in parenting, however, was the only factor that predicted sibling adjustment. An examination of parental self-efficacy exceeds the scope of the current study, which focuses on *parental satisfaction in parenting*.

Satisfaction in the parent's role as a caregiver was associated with sibling adjustment, such that higher satisfaction in the parental role was predictive of reduced sibling difficulties (poorer sibling psychological adjustment; Hesse et al., 2013). Hesse et al. explained that if parents were satisfied with their role of caring for a child with ASD they tended to view sibling-related challenges in a positive light and thus viewed the sibling as well-adjusted. It is conceivable that parents who felt incompetent in raising their child with ASD might have experienced a reduced satisfaction in their role and have become overwhelmed, thus viewed the sibling as maladjusted.

Not only has parental satisfaction been a significant predictor in the psychological adjustment of the siblings, but also *parental involvement in education and interventions* of the

child with ASD have been found in a longitudinal study to be significant predictors of psychological adjustment of the siblings. Benson and Karlof (2008) demonstrated that parents who were involved in the education and interventions of the child with ASD might be better satisfied in their parental role than those who were not as they believed that they were enhancing their child's education and development. According to the researchers, increased parental involvement in the education and interventions of the child with ASD was related to better sibling adjustment. The authors highlighted that increased involvement in education and interventions resulted in better management of the problems that arose for the children with ASD. Hence, increased parental involvement reduced stress and conflict among siblings; and resulted in better, more cohesive family interactions. Benson and Karlof's (2008) study complements that of Hesse et al. that found the involvement of parents in the education and therapy of the child with ASD to be correlated with better sibling adjustment.

C. Symptom Severity

Given that ASD falls on a spectrum, individuals with ASD vary in symptom severity. The DSM-5 categorizes the severity of symptoms into three levels. Level one is described as "requiring support"; individuals in this level have few deficits in interactions and communication and might be perceived as having no interest in social interactions. Individuals in level two are described as "requiring substantial support"; these individuals have marked deficits in verbal and nonverbal communications and still pose social impairment even with support. The most severe level is level three which is described as "requiring very substantial support"; individuals in this category have severe deficits in communication and interactions (APA, 2013). In addition, children with ASD might exhibit behavioral problems that require further attention and responsibility (e.g., aggression and acting out). Hence, different levels of

symptom severity might require different levels of care and support from family members. The level of impairment of a child with ASD might affect a sibling's psychological adjustment. This might be due to the different levels of parental time, energy, attention, and resources that the child with ASD requires. Whereas severe cases of ASD might require maximum care from family members, high functioning children might require slight support that might not influence the sibling adjustment.

Studies have found symptom severity to be associated with the adjustment of siblings of children with ASD (e.g., Benson & Karlof, 2008; Hastings, 2007; Meyer, et al., 2011; Mohammadi & Zarafshan, 2014). Others found no significant influences of symptom severity on the adjustment of the siblings (Tomeny et al., 2012). Meyer et al. (2011) indicated that symptom severity influenced the adjustment of the sibling; however, this relationship was mediated by maternal depression. That is, increased depressive symptoms in the mother as a result of increased symptom severity in the child with ASD tend to influence the adjustment of the sibling. This was due to the inability of the mother to balance the demands of both children who require different developmental needs. Hence, less adaptive coping styles were being modeled and adopted by the healthy sibling (Meyer et al.). However, Benson and Karlof (2008) found out that there was a direct relationship between the two variables: symptom severity was predictive of both pro-social behaviors in the sibling and total sibling psychological difficulties.

In a longitudinal study, Hastings (2007) found that children with ASD who had more behavioral problems tended to increase the risk of their sibling maladjustment. Hastings and Petalas (2013) demonstrated that higher levels of behavioral problems in children with ASD were associated with reduced warmth and closeness in their relationship and increased conflict

between the siblings. Moreover, increased problem behaviors of siblings were predicted by the behavioral problems of children with ASD (Petalas et al., 2012).

Similar results were obtained when Shivers, Deisenroth and Taylor (2012) examined predictors of anxiety among siblings of children with ASD. The researchers explained that siblings of children with ASD who exhibited increased behavioral problems had more behavior problems and less positive affect in the sibling relationship. Behavioral problems in the child with ASD also predicted anxiety in the siblings (Shivers et al., 2012).

According to Orsmond, Kuo, and Seltzer (2009), the sibling relationship changes over time as symptoms of ASD change. For some children with ASD, symptoms such as social communication and behavioral problems become less severe over time; whereas other individuals may possess severe symptoms across the lifespan. As a result, the sibling well-being differs across the developmental period as the symptoms change. The researchers pointed out that the problem behaviors of the child with ASD served as a consistent negative factor in the siblings' adjustment. Behavioral problems influenced the sibling adjustment specifically in reducing their willingness to participate in public activities and shared family activities (Orsmond et al., 2009).

Orsmond et al. also examined how different coping skills were used by the siblings. They defined coping skills as the strategies and behaviors that individuals use passively or actively to deal with stress. Problem-focused coping skills according to the authors, pertain to actively finding a solution to a problem to reduce the stress associated with it; whereas emotion-focused coping skills are used to regulate the emotions associated with a problem hence reducing stress levels (Orsmond et al.). During adolescence, siblings used more emotion-focused coping skills; but when problem-focused coping skills were used, it protected the

sibling from the negative influences of the behavioral problems of the child with ASD. As adults, the siblings used problem-focused coping strategies, and this buffered against the influence of behavioral problems on the sibling (Orsmond et al.). The use of problem-focused coping strategies helped sibling better adapt to the problems experienced with the child with ASD, and hence the siblings were better psychologically adjusted (Orsmond et al.).

D. Relevant Demographic Variables: Birth Order of Sibling, Gender of Sibling, Family Size, Family Income and Mother's Educational Level

1. Birth Order. Different studies have found birth order to have significant influences on the sibling's psychological adjustment. Orsmond et al. (2009) demonstrated that siblings who were older than the child with ASD usually engaged in more shared activities when compared to siblings who were younger. Tomeny et al. (2011) also found that when the siblings were older than the child with ASD, the sibling externalizing, internalizing and social problems decreased when compared to siblings that were younger than the child with ASD. Conversely, Macks and Reeve (2006) indicated that when the siblings were older than the child with ASD, the risk of psychological maladjustment was higher than when the sibling was younger. However, Macks and Reeve (2006) indicated that having multiple demographic risk factors influenced the psychological adjustment of the sibling.

2. Sibling's Gender. Being a male or a female sibling of a child with ASD has also influenced the psychological adjustment of the sibling. In contrast to what is usually found in the general population, Shivers et al. (2012) found that male siblings had higher anxiety levels when compared to female siblings during middle childhood (6-11 years). The authors explained that male siblings might have sub-clinical ASD symptoms which might be the reason for the elevated anxiety scores obtained. Similarly, Hesse et al. (2013) demonstrated that female

siblings were better psychologically adjusted than male siblings. Being more mature would make it easier for female siblings to process their difficulties of having a sibling with ASD. Kaminsky and Dewey (2002) and Macks and Reeve (2006) found consistent results with the previous research indicating that female siblings were better adjusted and more competent than their male counterparts.

3. Family Size. With larger family sizes, siblings of children with ASD were found to be better adjusted when compared to siblings of smaller family sizes. Orsmond et al. (2009) explained that the sibling relationship in larger families was associated with more positive affect when compared to siblings of smaller families. The authors indicated that the distribution of caregiving responsibilities among family members reduced pressure and stress.

Tomeny et al. (2011) also found that siblings in larger families had fewer internalizing, externalizing and social problems. Likewise, Kaminsky and Dewey (2002) indicated that in larger families, the presence of another typically developing sibling made it easier for the target sibling to relate to and share their difficult experiences. This in turn reduced the pressure and stress level on the sibling making them better psychologically adjusted.

4. Family Income and Mother's Educational Level. Hesse et al. (2013) explained that higher income families experienced reduced stress levels as they had more resources. This resulted in a better psychological adjustment of the sibling. Similarly, Tomeny et al. (2011) found that as family income increased externalizing, internalizing and social problems decreased. Giallo and Gavidia-Payne (2006) indicated, however, that the relation between SES and the risk of sibling adjustment was mediated by parental stress level and family functioning in families of children with disabilities. SES was measured in terms of income, educational achievements and employment. The authors indicated that with lower family resources the

siblings were exposed to higher stress. Consistent with previous studies, Macks and Reeve (2006) demonstrated that higher SES was predictive of better psychological adjustment of siblings of children with ASD. SES in that study was measured in terms of approximate annual household income.

CHAPTER IV

THE CASE OF LEBANON

Little empirical research has been carried out regarding ASD in Lebanon. Studies from Lebanon were concerned with the correlates of ASD (Hamade et al., 2013); comparing symptomatology of ASD and Down's Syndrome (Hajjar & Richa, 2008); validating the Lebanese Childhood Autism Scale (Akoury-Dirani, Alameddine & Salamoun, 2013); using Applied Behavior Analytic (ABA) procedures to teach children with autism to engage in independent leisure activities (Daou, 2014); and assessing the well-being of mothers of children with ASD (Obeid & Daou, 2015). There were no publications, however, concerning siblings of children with ASD in Lebanon, despite conducting an elaborate literature search using the terms "siblings/sisters/brothers of children with ASD/autism" and "Lebanon". The search was conducted using Google scholar, PsychInfo Academic Search Complete and PsycArticles and dating the search from 1980-2015. Therefore, the present study was the first to examine maternal perceptions of the predictors of psychological adjustment in siblings of children with ASD in Lebanon.

Aside from the lack of research studies on ASD, there is a lack of qualified interventions, education and formal support for families of children with ASD. The literature has shown that children with ASD require a minimum of 25-40 sessions of interventions per week, typically paid for by the federal government and/or insurance companies (Department of Health, 1999; Department of Health and Human Services, 1999; Gill, 2001; Jacobson, 2000; Keenan et al., 2015; Rosenwasser & Axelrod, 2001). Only a small fraction of Lebanese families affected by ASD seek Applied Behavior Analytic (ABA) intervention for their children (Daou, 2014; Obeid et al., 2015), and those families pay out of pocket for these services, with costs

ranging between $20 and $100 per hour. As a result, they can usually afford just one or two sessions a week – far from the number of intervention hours needed for optimal outcomes. In addition, Obeid et al. (2015) explained that in schools in Lebanon that include children with ASD usually lack trained staff to provide evidence-based interventions. Therefore, despite the fact that some children with ASD might be receiving interventions, it is likely that these interventions are not optimal. There have been a few NGOs that spread awareness about ASD in Lebanon and provide services for children with ASD. However, the need of formal support for ASD-specific interventions and the lack of availability of ASD interventions in Lebanon adversely affect the psychological outcomes of those affected by this disorder (Obeid & Daou, 2015).

CHAPTER V

AIMS AND HYPOTHESIS

The literature regarding the adjustment of siblings of children with ASD has been controversial with different variables playing significant roles in predicting sibling adjustment. Some of the significant predictors that have been studied include symptom severity (e.g., Benson & Karlof, 2008; Hastings, 2007; Meyer, Ingersoll, & Hambrick, 2011; Mohammadi, & Zarafshan, 2014), parental sense of satisfaction (Hesse et al., 2013), and sibling differential parenting (Rivers & Stoneman, 2008; Kowal, et al., 2002). The first aim of the current study was to examine the effect of symptom severity, parental sense of satisfaction, mother's involvement in education, mother's involvement in intervention, and sibling differential parenting on perceived sibling adjustment. This study was the first to look at these variables together and analyze each variable's contribution in predicting perceived sibling adjustment. Based on the findings in the literature, it is assumed that the more severe the symptoms of the child with ASD and the more the behavioral problems, the more negatively affected the sibling. Therefore, the following hypothesis was tested.

Hypothesis 1a: Symptom severity will have a negative correlation with the psychological adjustment of the sibling.

Hypothesis 1b: Decreased symptom severity in the child with ASD will predict better psychological adjustment in the sibling.

Consistent with the literature, the effect of parental satisfaction will be examined. It is assumed that parental satisfaction will be a significant predictor of sibling psychological adjustment (Hesse et al., 2013). Better satisfaction with parental role as caregivers will predict higher levels of adjustment in the typically developing sibling. Moreover, mother's involvement

in the education and the intervention of their child with ASD is assumed to be associated with better adjustment of the siblings (Benson & Karlof, 2008). Therefore, the following hypotheses were tested.

Hypothesis 2a: Parental sense of satisfaction will have a positive correlation with the psychological adjustment of the sibling.

Hypothesis 2b: Higher parental sense of satisfaction will predict better sibling psychological adjustment.

Hypothesis 2c: Mother's involvement in the education of the child with ASD will be positively correlated with psychological adjustment of the sibling.

Hypothesis 2d: Mother's involvement in the education of the child with ASD will predict better psychological adjustment of the sibling.

Hypothesis 2e: Mother's involvement in the intervention of the child with ASD will be positively correlated with the psychological adjustment of the sibling.

Hypothesis 2f: Mother's involvement in the intervention of the child with ASD will predict better psychological adjustment of the sibling.

Sibling differential parenting was also shown to be associated with the psychological adjustment of siblings of children with ASD (Rivers & Stoneman, 2008; Kowal, et al., 2002). Siblings in families with a child with ASD compared to siblings of typically developing children are more likely to experience differential parenting since more care and attention is typically given to the child with ASD. It is assumed that lower sibling differential parenting is predictive of better sibling psychological adjustment. The following hypotheses were tested.

Hypothesis 3a: Sibling differential parenting will be more prevalent in families of children with ASD compared to families of typically developing children.

Hypothesis 3b: Sibling differential parenting will be negatively correlated with the psychological adjustment of the sibling.

Hypothesis 3c: Lower sibling differential parenting will predict better sibling adjustment.

It will also be valuable to examine influential factors when assessing the psychological adjustment of siblings of children with ASD. Therefore, a second aim of the study is to examine the extent to which family size, family income, gender of the sibling, mother's educational level and birth order will influence the adjustment of the sibling. It was found that larger family sizes (Kaminsky & Dewey, 2002), higher family income, female siblings (Hesse et. al, 2013) and older siblings (Orsmond et al., 2009) were better adjusted when compared to smaller family sizes, lower family income, mother's educational level (Tomeny et al. 2011), male siblings and younger siblings (Macks & Reeve, 2006). The following hypotheses were tested:

Hypothesis 4a: Higher levels of family income per month will be correlated with better psychological adjustment of the sibling.

Hypothesis 4b: Higher levels of the mother's education will be correlated with better psychological adjustment of the sibling.

Hypothesis 4c: Larger families will be correlated with better psychological adjustment of the sibling.

Hypothesis 4d: Female siblings will be better adjusted compared to male siblings.

Hypothesis 4e: Older siblings will be better adjusted compared to younger siblings.

Hypothesis 4f: Symptom severity, sibling differential parenting and parental sense of satisfaction will predict sibling psychological adjustment when partialling out for the effect of family income, mother's educational level, family size, gender and birth order.

A final aim of the current study was to investigate the extent to which siblings of children with ASD differ from siblings of typically developing children in terms of their psychological adjustment. The psychological adjustment of siblings of children with ASD has been measured in terms of behavioral and emotional problems that siblings experience as a result of the individual with ASD. The following hypothesis was tested:

Hypothesis 5: Siblings of typically developing children will be better adjusted than siblings of children with ASD.

CHAPTER VI

METHOD

A. Research Design and Format of the Survey

The study used a quantitative non-experimental survey design. A battery of questionnaires consisting of five scales was distributed to the participants. The scales were counterbalanced (see section on order effect and counter balancing) .Three of the scales measured the three independent variables: *symptom severity*, *sibling differential parenting* and *parental satisfaction*. The fourth scale measured the dependent variable: *sibling psychological adjustment.* The last scale assessed demographic variables: family size, gender of the child with ASD/ youngest child, gender of the sibling, age of the child with ASD/youngest child, age of the sibling, birth order, mother's educational level, family income and the mother's involvement in the education and intervention of the child with ASD.

Mothers of typically developing children completed the same questionnaires, except for the scale that assessed symptom severity as it only applied to the ASD group. Another variation between the two groups was that the term "child with ASD" was replaced with "youngest child" in the instructions across the relevant instruments (Strength and Difficulties Questionnaire, Sibling Inventory of Differential Experiences and the demographic Questionnaire). The investigators made this decision on the basis that the youngest child is likely to require the most care and attention compared to his/her older siblings, which is arguably akin to the consistent demands of having a child with ASD.

Also included was an informed consent form (see Appendix A) used to explain the purpose of the study as well as the risks and benefits of participating in the study. It included information about confidentiality, anonymity, and the voluntary nature of participation. Contact

information of the investigators and the IRB was provided in the informed consent form in case the participants had any question about the study.

The scales used in the study were translated using the translation and back translation technique. The scales were first translated by a bilingual translator from English to Arabic. All scales were then translated using the back-translation method by colleagues who were fluent in both Arabic and English. The back translated versions were compared with the original version of the scales by the researcher and a sworn translator. The minor discrepancies that were found were then reconciled.

B. Scales and Reliability

1. **Symptom Severity.** Symptom severity and behavioral problems of children with ASD was measured using The Indian Scale for Assessment of Autism (ISAA, see Appendix B). The ISAA has been previously used in the Lebanese population, demonstrating high reliability with Cronbach's alpha of .96 (Obeid & Daou, 2015). The ISAA measures the following 6 characteristics of ASD: social relationships and reciprocity, emotional responsiveness, speech-language and communication, behavioral patterns, sensory aspects, and cognitive components. The ISAA was developed by the National Institute for the Mentally Handicapped (NIMH) in 2008 (Amr, Raddad, El-Mehesh, Mahmoud, & Gilany, 2011) and is a 40-item, 5-point Likert-type scale. The ASD cutoff score is 70 points. "Mild ASD" includes scores of 70–106, scores ranging from 107–153 indicate "moderate ASD", and scores of 153 and above indicate "severe ASD". Amr et al. (2011) indicated that the ISAA is an appropriate tool for measuring the severity of ASD in developing countries as opposed to other Western rating tools. The scale had a good internal consistency in this study with Cronbach's alpha of .92.

2. Differential Parenting. A modified form (Maleki-Tehrani, 2006) of the Sibling Inventory of Differential Experience (SIDE; Daniels & Plomin, 1985; see Appendix C) was used to measure differential parenting. Specifically, the parent version of the modified SIDE was used (Maleki-Tehrani, 2006). The SIDE assesses non-shared family environment of siblings using a 5-point Likert scale (Daniels & Plomin, 1985). In the modified form, the questions that were adopted from the original questionnaire measured differential maternal affection and differential maternal control. In addition, Maleki-Tehrani (2006) added new items that measured time spent with children and chores at home. Items were averaged to obtain the total score of the subscale. For all subscales, the higher score indicated differential parenting in favor of the child with ASD and the lower score indicated favoring the typically developing sibling. The differential maternal affection scores and the amount of time spent scores were reverse-coded. Therefore, higher scores indicated that less maternal affection and higher maternal control was experienced by the typically developing sibling. In addition, more chores were expected to be carried out by the typically developing sibling, and mothers spent less time with the typically developing sibling compared to the sibling with ASD. The original form of the SIDE was found to have high two-week test-retest reliabilities ranging from .77 to .85 in an adolescent sample (Daniels & Plomin, 1985). The reliability for the modified parent form was not reported in the study (Maleki-Tehrani, 2006). The SIDE had a poor internal consistency in this study with Cronbach's alpha of .47. This will be addressed in the Limitations section of the Discussion. Many of the initial respondents in the ASD group left blank the section in the SIDE questionnaire that inquired about fairness and rationales in the context of sibling differential parenting (e.g., whether it was fair that the mother spent more time with the child with autism). Some of those mothers voiced their concern that they could

not complete those questions, on the basis of which these items were dropped from the remaining versions of the questionnaire. It is noteworthy that those items were added in the modified form of the SIDE (Maleki-Tehrani, 2006) and not in the original (Daniels & Plomin, 1985). In addition, these items did not impact any of the hypotheses tested.

3. Parental Satisfaction. The Parenting Sense of Competence Scale (PSOC, see Appendix D; Johnston & Mash, 1989) was used to measure parental satisfaction in parenting. The PSOC is a 16-item, 6-point Likert-type scale. The PSOC consists of two subscales that measure parental satisfaction and self-efficacy. Parental satisfaction pertains to the parent level of frustration, anxiety and poor motivation in fulfilling their role as parents; and self-efficacy pertains to the belief that parents possess regarding their competence and familiarity with parenting. The total score is the sum of all the 16 items, the score ranges from 16 to 96. The score on the self-efficacy subscale is reversed. Therefore, for both subscales higher ratings indicate greater levels of efficacy and satisfaction. "Low parental competence" is indicated by the score range of 16 to 50; "Moderate parental competence" is indicated by the score range of 51 to 69 and "high parental competence" is indicated by the score range of 70 to 96. The PSOC has been shown to have good validity and reliability (Johnston & Mash, 1989) with Cronbach's alpha of .85 (Hesse et al., 2013). For the current study, the full PSOC scale had an acceptable internal consistency with Cronbach's alpha of .69. The PSOC subscale, parental satisfaction, had an acceptable internal consistency with a Cronbach's alpha of .76. The second subscale, parental efficacy, had a Cronbach's alpha of .56. For this study, only the parental satisfaction subscale was used to measure parental satisfaction.

4. Sibling Psychological Adjustment. The Strengths and Difficulties Questionnaire (SDQ, see Appendix E; Goodman, 2001) is a 25-item measure used with children between ages of 4

and 16. The Mothers filled out the parent version of the scale. The instrument is used to detect childhood emotional and behavioral problems as well as the presence of psychopathology. Each item had three possible responses: 'not true', 'somewhat true', or 'always true'. From the 25 items, five sub-scales are obtained, each with five items. These subscales measure conduct problems, hyperactivity/ inattention, emotional symptoms, peer problems and pro-social behaviors. The scores of the first four subscales were summed to obtain a total difficulties score ranging from 0 to 40, representing increasing difficulties. Those four subscales measured the psychological adjustment of siblings[2]. The remaining subscale measured pro-social behavior, ranging from 0 to 10 representing increasing caring, helpful behavior. The scores are classified as within the 'normal', 'borderline' or 'abnormal' clinical range. The SDQ has been validated and used in studies involving Palestinian children and has reliability and internal consistency with Cronbach's alpha of .72 (Khamis, 2013). Goodman (2001) validated the SDQ involving over 10,000 children from the general population in the UK. In addition, the SDQ has been used in previous studies examining adjustment in siblings of children with ASD and has been shown to be a valid and reliable measure in those studies (Benson & Karlof, 2008; Griffith et al, 2013; Hastings, 2003; Hesse et al, 2013). The SDQ had a poor reliability in this study, however, with Cronbach's alpha of .47. The subscale-total difficulties- also had a poor Cronbach's alpha of .42. This will be further discussed in the Limitations section.

5. Measurement of Covariates: **Demographic Characteristics.** The demographic questionnaire (see Appendix F) included questions about age and gender. Other questions that

[2] "Total difficulties" is the subscale found in the SDQ that assess any internalizing or externalizing problems that a child might be experiencing. For the purpose of this study, this subscale was used as a measure for psychological adjustment and since it has also been used by other studies (e.g., Hesse et al, 2013; Hastings & Petalas, 2013; Meyer et al, 2011). There is an inverse relationship between total difficulties and psychological adjustment. Hence, the more difficulties a child experiences the less psychological adjusted he or she is.

were included asked about family size, educational level and employment status of the mother, household income, marital status, mother's involvement in education and intervention (on a rating scale of 1-4), and the amount of time the mother spent with her children. Information about the target child's age and gender was also requested.

C. Main Study

1. **Recruitment Procedure and Data Collection.** Data collection began after receiving the Institutional Review Board's (IRB) approval on December 18, 2015. Data collection ended on March 4, 2016. Inclusion criteria for this study were as follows: (a) for the ASD group, mothers needed to have a child with an ASD diagnosis and at least one typically developing child. The mothers should also be currently residing in the Great Beirut regions. Mothers should have children between the age range of 4 to 20[3] years old; (b) for the comparison group, mothers needed to have at least two children that are typically developing. Similar to the ASD group, the mothers should be residing in the Great Beirut regions and have children between the age range of 4 to 20 years old. Exclusion criteria for both groups included: having a child who is affected by a disability/condition other than autism (i.e: other developmental disorder, learning disability, psychological disorder, physical disability, or a chronic disease).

Several recruitment procedures were devised due to the difficulties encountered while recruiting participants. The results of each procedure are provided (see Table 1). As a first procedure, flyers (see Appendix G) and Facebook posts were posted and shared. This only yielded three potential participants, two of whom met the study's inclusion criteria. The second procedure included contacting behavioral therapists who work with children with ASD. These therapists worked closely with children and families affected by ASD. The therapists presented mothers

[3] The age range was specified to be between 4 and 20 years. However, only one sibling was 20 years old. In addition, siblings who had a month or two to turn 4 years old (3 siblings) were also included in the study.

with recruitment flyers. Those who accepted to participate were then sent the battery of questionnaires with the behavioral therapist. Upon completion the mothers handed the questionnaires in sealed envelopes to the behavioral therapist who returned them back to the investigators. However, this method only yielded 12 participants. The third recruitment strategy involved contacting schools and NGOs that included children with ASD. The investigators first called the schools and NGOs to explain the purpose of the study. For those who were interested, the investigators went forward and sent them a soft copy of the battery of questionnaires to the schools/ NGOs for their review. Once their approval was granted, the investigators went to the schools and NGOs and handed the administrators the batteries for distribution to families of children with ASD. The batteries were collected after 2 weeks.

Only 6 of the 15 schools and NGOs that were contacted agreed to distribute flyers. One of the schools indicated that they had students with traits of ASD rather than meeting full diagnosis of ASD. Another school was not interested and explained that they have had mothers take part in a number of research studies already. Three schools/NGOs did not accept our requests for recruitment, and four of them simply did not return our calls.The six schools/NGOs that accepted to distribute flyers for the study reported that only a few mothers returned the batteries. This procedure yielded 50 participants. Finally, recruitment flyers were distributed to mothers attending a training workshop for mothers of children with ASD. Six mothers showed interest in the current study and were given the survey battery. The mothers were given two weeks to fill the questionnaire and return them back to the investigators.

Table 1
Number of Survey Batteries Collected across the Different Recruitment Methods Used

Method of Recruitment		Number of Survey Batteries Collected
Schools	School 1	2
	School 2	23
	School 3	5
	Total:	30
NGO	NGO 1	10
	NGO 2	4
	NGO 3	6
	Total:	20
Behavioral Therapists	Behavioral Therapist 1	3
	Behavioral Therapist 2	4
	Behavioral Therapist 3	2
	Behavioral Therapist 4	1
	Behavioral Therapist 5	2
	Behavioral Therapist 6	0
	Behavioral Therapist 7	0
	Total:	12
Posts	Facebook	2
	Flyers	6
	Total:	8
	Grand Total:	70

Regarding the recruitment of mothers in the comparison group, women with children in cafes and restaurants in the Greater Beirut region were approached. The researchers explained to the mothers what the study was about. For those who accepted to participate, inclusion and exclusion criteria were first confirmed before handing them the batteries. The participants then proceeded to read the informed consent form and to fill out the questionnaires. This method yielded 36 participants in the comparison group. In addition, snowball sampling was used to recruit mothers in the comparison group, whereby mothers received recruitment flyers from the investigators and in turn distributed them to other mothers who met the inclusion criteria and might have been interested in participating in the study. This latter strategy yielded 32 participants.

In order to compensate for the participants involvement in the study, a draw was made at the end of the data collection phase in which three participants won a 50,000 LL gift card. However, only a few participants accepted to participate in the draw (17 mothers). In order not to collect any identifying information that could have been traced to the participants responses, after the mothers filled the questionnaires and returned them to the investigator, a separate piece of paper was given for the participants to write down her name and phone number.

2. **Order Effects and Counterbalancing.** Two counterbalanced versions of the questionnaire were created to control for order and sequence effects. In version 1, the Strengths and Difficulties questionnaire was placed at the start of the battery and the measure of Parental Sense of Competence was placed at the end of the battery before the demographic questionnaire. In version 2, the placement of the questionnaires- Strength and Difficulties questionnaire and Parental Sense of Competence was reversed.

3. **Sample Characteristics and Demographics.** The sample size included 138 participants, 70 mothers of children with ASD and 68 mothers of typically developing children. The mean age of the mothers of children with ASD was 39.78 years (SD= 6.93) within an age range of 26 to 59 years (see Table 2). For the comparison group, the mean age of the mothers was 38.25 years (SD= 5.55) within an age range of 27 to 55 years (see Table 2).

Mothers in both groups were very similar in terms of relationship status and family size. Most mothers of children with ASD were married (90%). On average, most families in the ASD group consisted of 5 family members (M= 4.63, SD= 1.04). In the comparison group, the majority of mothers (88.2%) were married. Similar to the ASD group, most families had 5 family members (M= 4.78, SD= .86). Table 3 presents more details concerning relationship status.

The majority of mothers in the ASD group (34.3%) received a Baccalaureate. However, the majority of the mothers in the comparison group had a Bachelor degree (48.5 %). Overall, mothers in the comparison group had a higher level of education compared to mothers in the ASD group. Table 4 provides more details on the educational level of the mothers.

Furthermore, most mothers of children with ASD were housewives (75.7%). 14.3% had a full time job and 8.6% had a part time job. Similarly, most of the mothers in the comparison group were housewives (45.6%). Almost equal numbers of mothers in the comparison group had full time and part time jobs (26.5%; 27.9% respectively). Compared to the ASD group, more mothers in the typically developing group seemed to have a job (see Table 4).

Looking at family income, most mothers in the ASD group reported earning between 750,000 LL and 1,500,000LL (22.9%) and between 1,500,000LL and 3,000,000LL

Table 2
Descriptive of the Sample Characteristics

	ASD Group				Typically Developing Group			
	Mean	S.D	Minimum	Maximum	Mean	S.D	Minimum	Maximum
Mother's Age	39.78	6.93	26	59	38.25	5.55	27	55
Family Size	4.63	1.04	3	8	4.78	.86	3	7
Sibling's Age	9.68	4.17	4	20	11	3.60	4	18
Child's Age	9.73	4.16	4	18	8.60	3.02	4	14
Time Spent	3.79	1.07	2	5	3.75	1.06	1	5
Educational Level	2.52	1.15	1	6	2.79	.97	3	7
Family Income	4.46	1.77	1	7	5.55	1.27	1	7

Table 3
Descriptives of the Sample Characteristics: Child's gender, Sibling's Gender, Mother's Marital Status.

		ASD Group		Typical Group	
		N	%	N	%
Child's Gender	Male	49[4]	70%	43	63.2%
	Female	20	28.6%	25	36.8%
Sibling Gender	Male	39	55.7%	49	72.1%
	Female	30	42.9%	19	27.9%
Mother's Marital Status	Married	63	90%	60	88.2%
	Divorced	1	1.4%	2	2.9%
	Separated	1	1.4%	3	4.4%
	Widowed	4	5.7%	3	4.4%

[4] All sample characteristics for ASD group are based on the 69 of the 70 responses. This is because one participant did not complete the demographics questionnaire. After running the MVA, there were no values of 5% or more for the missing data for the demographics characteristics. In addition, the demographic questionnaire does not make 75% of the items that the participant filled. Therefore, the participant responses for other questionnaires were kept.

Table 4
Descriptives of the Sample Characteristics: Mother's Educational Level, Mother's Employment Status, Family Income per month

		ASD Group		Typically Developing Group	
		N	%	N	%
Mother's Educational Level	Brevet	13	18.6%	5	7.4%
	Baccalaureate	24	34.3%	19	27.9%
	Bachelor	19	27.1%	33	48.5%
	Master's	11	15.7%	9	13.2%
	Doctorate	0	0%	0	0%
	Other	2	2.9%	2	2.9%
Mother's Employment Status	Unemployed	53	75.7%	31	45.6%
	Part-time Job	6	8.6%	19	27.9%
	Full-time Job	10	14.3%	18	26.5%
Household Income	Measured in LL /month				
	Less than 500,000	2	2.9%	0	0
	500,000 - 750,000	6	8.6%	0	0
	750,000 – 1,500,000	16	22.9%	5	7.4%
	1, 500,000 -3,000,000	16	22.9%	11	16.2%
	3,000,000 -7,500,000	7	10%	13	19.1%
	More than 7,500,000	7	10%	19	27.9%
	Prefer not to say	15	21.4%	20	29.4%

(22.9%) per month. Mothers in the comparison group seemed to earn more income per month when compared with the mothers in the ASD group. Most mothers in the comparison group reported that they earned more than 7,500,000 LL per month (27.9%). However, it is important to note that most participants in the comparisons group preferred not to say how much they earned (29.4%). More information about family income is provided in Table 4.

Regarding the children demographics, most of the children diagnosed with ASD were males (70% males and 28.6% females). This mirrors the higher prevalence of ASD in males when compared to the ratio of ASD in females (APA, 2013). The mean age of the children with ASD was 9.73 years (SD= 4.16) with an age range between 4 and 18 years (see Table 2). Since matching was done based on age and gender of the child with ASD, the demographics of the youngest child in the comparison group mirrored that of the child with ASD. 63.2% of the children in the comparison group were males and 36.8% were females. The mean age of the youngest child in the families of comparison group was 8.60 years (SD= 3.02) with the age range between 4 and 14 years (see Table 2).

The majority of the siblings of children with ASD were males (55.7%). The mean age of the siblings in the ASD group was 9.68 years (SD=4.17) and ranged between 4 and 20. Likewise, for the comparison group, most of the siblings were males (72.1%). The mean age of siblings in the comparison group was 11 (SD= 3.60) and ranged between 4 and 18 years. Most mothers in the ASD group (34.3%) spent 81-100% of their time with the child with ASD when not at school. For mothers of typically developing children, the majority (30.9%) indicated that they spend a 41-60% of time with their youngest child. Based on these statistics

it seems that mothers of children with ASD spent more time with the child with ASD when compared to mothers in the comparison group.

With regards to the involvement of mothers in the education of the child with ASD, the majority (51.4%) were somewhat involved. This was also mirrored in the sample of typically developing mothers; the majority (42.6 %) of mothers in the comparison group were somewhat involved. Additional information is provided in Table 5.

Conversely, when looking at the rates in which mothers of children with ASD were involved in the interventions of their children, most mothers in the ASD group (54.3%) were almost always involved. 45.6% of the mothers in the comparison group were almost involved and 41.2% were somewhat involved. A higher percentage of mothers in the ASD group were found to be involved in the interventions of their child. Additional information on mother's involvement in intervention is provided in Table 5.

4. Analytic Plan. Multiple Regression Analyses were conducted to examine the influence of the predictor variables on the outcome variable. In addition, a hierarchal regression analyses was conducted to examine the influence of the predictor variables on the outcome variable when controlling for the demographic variables. Furthermore, correlation and t-tests were conducted to examine other hypotheses of the study.

Table 5

Descriptives of the Sample Characteristics: Mother's Involvement in Education and Intervention.

		ASD Group		Typically Developing Group	
		N	%	N	%
Mother's involvement in Education	Not at all	0	0	2	2.9%
	Rarely	10	14%	10	14.7%
	Neither Involved Nor Uninvolved	22	31.4%	27	39.7%
	Somewhat	36	51.4%	29	42.6%
	Always	0	0	0	0
Mother's Involvement in Intervention	Not at all	1	1.4%	3	4.4
	Rarely	7	10%	6	8.8%
	Neither Involved Nor Uninvolved	0	0	0	0
	Somewhat	23	32.9%	28	41.2%
	Always	38	54.3%	31	45.6%

CHAPTER VII

RESULTS

A. Preliminary Analysis

Prior to conducting the psychometric properties of the scale and examining the main analyses, preliminary analysis was conducted. The preliminary analysis involved missing values analysis, analysis of univariate and multivariate outliers and normality analysis.

1. Missing Value Analysis. The missing value analysis revealed that all the variables had less than 5% missing values except for the Siblings Inventory for Differential Experiences (SIDE) item 10 (11.4%), Siblings Inventory for Differential Experiences item 11 (14.3%), Indian Scale for Assessment of Autism items 22 (7.1%), 30 (7.1%), 34 (7.1%), 35 (5.7%), 37 (5.7%), 39 (7.1%). To test whether the data were missing completely at random Little's MCAR test was run. The statistically non-significant result indicated that items were missing completely at random. Therefore, the missing data were kept since there was no significant pattern for the missing data.

2. Univariate and Multivariate Outliers. Univariate outliers were inspected through Z-scores. One univariate outlier was found with Z-score above ±3.29 standard deviations. The univariate outlier was found for the variable parent satisfaction with case number 59. No other univariate outlier was found for the DV and other IVs. Multivariate outliers were inspected through Mahalanobis distance using SPSS syntax. As recommended by Tabachnick and Fidell (2007), a case with a Mahalanobis Distance greater than $\chi_2(5) = 20.52$, $p < .001$, is considered to be a multivariate outlier. Results showed the absence of any multivariate outliers. The univariate outlier was kept in the sample as it did not turn out to be a multivariate outlier and due to the small sample size of the study.

3. Normality. The assumption of normality was tested using the Kolmogorov-Smirnov (KS) test since the data set was less than 100 for the ASD group. The results indicated that the assumption of normality was met for the dependent variable- sibling psychological adjustment D (65)= .088 p > .05 (as measured by the SDQ subscale: Total difficulties[5]), independent variables- Parent sense of satisfaction D(65)= .074 p > .05, Sibling differential parenting D(65)= .102 p > .05 and Autism Severity D(65)= .084 p > .05. The variables, mother's involvement in education and mother's involvement in intervention were not normally distributed: D(65)= .34, p<.05 , D(65)= .35, p< .05 respectively. In order to preserve the integrity of the data and due to the small sample size of this study, transformations will not be carried out. In addition, Tabachnik and Fidel (2007) explain that transformations usually hinder interpretation. Parametric testing for these variables are recommended to be used when applicable (Field, 2009).

B. Psychometrics

Factor Analysis was not carried out as the sample size of the current study was small. Tabachnick and Fidell (2007) agree that "it is comforting to have at least 300 cases for factor analysis" (p.613). The current sample size of N= 70 for the main group (ASD) was below the recommended 300, and thus was inadequate for conducting a factor analysis. A reliability analysis was run to measure the reliability of each scale (Table 6). The results were discussed

[5] "Total difficulties" is the subscale found in the SDQ that assess any internalizing or externalizing problems that a child might be experiencing. For the purpose of this study, this subscales was used as a measure for psychological adjustment and since it has also been used by other studies (e.g., Hesse et al, 2013; Hastings & Petalas, 2013; Meyer et al, 2011). There is an inverse relationship between total difficulties and psychological adjustment. Hence, the more difficulties a child experiences the less psychological adjusted he or she is.

Table 6

Reliability of the Scales and Subscales: Chronbach's alpha

Scales and Subscales	Chronbach's alpha	N of items
Sibling Inventory for Differential Experiences	.57	13[6]
Control Subscale	.67	4
Chores Subscale	.55	3
Affection Subscale	.65	5
Parenting Sense of Competence Scale	.69	16
Parental Efficacy Subscale	.56	7
Parental Satisfaction Subscale	.76	9
Strengths and Difficulties Questionnaire	.47	25
Total Difficulties	.42	20
Conduct Problems Subscale	.49	5
Hyperactivity Subscale	.75	5
Emotional Subscale	.49	5
Peer Problems Subscale	.48	5
Prosocial Behavior Subscale	.73	5
Indian Scale for Assessment of Autism	.92	40
Social Relationship and Reciprocity	.83	9
Emotional Responsiveness	.85	5
Speech –Language and Communication	.85	9
Behavior Patterns Subscale	.83	7
Sensory Aspects Subscale	.68	6
Cognitive Component	.25	4

[6] An additional item was available in the questionnaires that assessed with whom the mother spent more time

earlier. The poor reliability of the Sibling Inventory for Differential Experiences and the Strengths and Difficulties will be further discussed in the Limitations section.

C. Order Effect

Independent samples t-test was run to examine the effects of counterbalancing on the dependent variable. Thirty-three participants (47.1%) received version 1 which had the Strengths and Difficulties questionnaire at the start of the battery and the measure of Parental Sense of Competence[7] was placed at the end of the battery before the demographic questions. Thirty-six participants (51.4%) received version 2 in which the order of the two measures were reversed. When comparing total difficulties across the two versions, Levene's test was not significant, $F(1, 68) = .21$, $p>.05$, indicating that the assumption of homogeneity of variance was met. The t-test was non-significant, $t(67) = 1.82$, $p>.05$, indicating that there was no difference between the two versions of the questionnaire.

D. Scales Descriptives

Only the total scores and subscale scores that were concerned with the hypotheses of the study were examined. The items of the Indian Scale for the Assessment of Autism and Sibling Inventory for Differential Experiences were summed to obtain the total score of the scales. Similarly the items that measured the subscales- Parental satisfaction (PSOC subscale) and total difficulties subscale (SDQ subscale) were summed to obtain the total subscale score. The means and standard deviations of the scales are provided in Table 7.

[7] Parenting sense of competence scale included the subscale for the parenting satisfaction which was one of the independent variables.

Table 7
Scales Descriptive

	Range	Minimum	Maximum	Mean	Std. Deviation
Symptom Severity	0-158	42.00	155.00	93.24	25.06
Sibling Psychological Adjustment	0-40	1.00	25.00	11.10	5.10
Sibling Differential Parenting	0-65	2.00	5.00	3.53	.49
Parental Satisfaction	0-96	14.00	49.00	30.17	8.33
Mother's involvement in education	1-4	2.00	4.00	3.38	.73
Mother's involvement in Intervention	1-4	1.00	4.00	3.42	.74

Concerning the outcome variable, the psychological adjustment of siblings of children with ASD, the total difficulties subscale of the SDQ was used to assess this variable as it consists of both the externalizing and internalizing problem behavior of the child. It seems that on average, mothers reported that siblings of children with ASD have a normal psychological adjustment (*M*= 11.10, *SD*= 5.10). Regarding the symptom severity of the children with ASD, on average, mothers reported that the children have mild severity of ASD (*M*= 93.24, *SD*= 25.06). When looking at the parental satisfaction subscale of the PSOC, mothers reported a moderate level of satisfaction (*M*=30.17, *SD*= 8.33) in their role as parents. Furthermore, on average, mothers reported that the siblings of children with ASD experienced somewhat higher levels of sibling differential parenting (*M*=3.53, *SD*= .49) than the child with ASD. Regarding the two items that assessed the mothers' involvement in the education of the child with ASD and her involvement in the interventions for the child with ASD, on average, the mothers reported that they were "somewhat involved" in both domains (*M*= 3.38, *SD*= .73 ; *M*= 3.42, *SD*= .74 respectively).

E. Correlation Analyses.

1. **Assumptions of the Pearson Correlation Test.**

a. Variable type. The Pearson's Correlations between the outcome variable (sibling psychological adjustment) and the variables: symptom severity, parental satisfaction, family income, family size, and sibling differential parenting were examined using one-tailed tests to test hypotheses 1a, 2a, 3b, 4a, and 4c. For the variables, mother's educational level, mother's involvement in education, and mother's involvement in intervention a non-parametric statistic, Spearman's correlation coefficient was used as the variables violated either one of the

assumptions (variable type and normality as described above) to test hypothesis 2c, 2e and 4b. The correlation matrix is presented in Table 8.

b. Normality of predictors and outcome variable. See section on Normality.

2. Main Analyses.

The Pearson's Correlations between the outcome variable (sibling psychological adjustment) and the variables: symptom severity, parental satisfaction, family income, family size, mother's involvement in education, mother's involvement in intervention, and sibling differential parenting were examined using one-tailed tests to test hypotheses 1a, 2a, 2c, 2e,3b, 4a, and 4c. For the variable, mother's educational level, a non-parametric statistic, Spearman's correlation coefficient was used as it violated one of the assumptions (variable type, as described above). The correlation matrix is presented in Table 8.

The Pearson's Correlation revealed that there was a small to medium size, significant positive correlation between symptom severity and total difficulties that the sibling experienced $r = .32$, $p<.05$. This indicates that the more severe the ASD symptoms were the more psychological difficulties (i.e., poorer sibling psychological adjustment) the sibling experienced. Therefore, hypothesis 1a was supported.

The Pearson's Correlation also revealed that there was a small to medium negative correlation between parental satisfaction and the total difficulties the sibling experienced $r=-.29$, $p< .05$. Therefore, the less parental satisfaction the mothers reported as far as their parental role the more difficulties reportedly experienced by the sibling (i.e: poorer sibling psychological adjustment). Therefore, hypothesis 2a was supported.

Table 8

Correlation Matrix

	Total Difficulties
Symptom Severity	.32*
Parental Satisfaction	-.29*
Mother's involvement in Education	-.04
Mother's involvement in Intervention	-.13
Sibling Differential Parenting	.12
Income	-.39**
Family size	.23*
Mother's Educational Level	-.12

There was a non-significant relationship between the psychological adjustment of the sibling and the mother's involvement in both the education and intervention of the child with ASD (r= -.04, p > .05; r= -.13, p> .05, respectively). Therefore, hypotheses 2c, and 2e were not supported.

Furthermore, sibling differential parenting did not have a significant correlation with the psychological adjustment of the sibling r= .12, p >.05. Hypothesis 3b not confirmed.

When looking at family characteristics, family income level per month had a significant negative small to medium correlation with the total difficulties that the sibling experienced r= -.39 , p <.01. Therefore, the more money the families earned per month the less the difficulties the siblings reportedly experienced (i.e: better sibling psychological adjustment). Hypothesis 4a was thus supported. However, the mother's education did not have a significant correlation with the adjustment of the sibling r= -.12, p> .05, and hypothesis 4b was not confirmed.

Additionally, there was a significant, positive, small to medium sized correlation between family size and total difficulties the siblings experienced, r= .23, p< .05. This means that the larger the families were the more total difficulties siblings' reportedly experienced (poorer adjustment). Hence, hypothesis 4c was supported.

F. Regression Analyses: Predictors of Psychological Adjustment in Siblings of Children with ASD

To test for hypotheses 1b, 2b, 2d, 2f and 3c a multiple linear regression was used. The variables, symptom severity, parental satisfaction, mother's involvement in education, mother's involvement in interventions, sibling differential parenting were entered through the forced entry method, because they have been known to be significant predictors of sibling psychological adjustment when used previously in the literature. According to Field (2009),

"stepwise methods (forward and backward methods) are best avoided except for exploratory model building" (p.213).

To test for hypothesis 4f, a hierarchal multiple regression analysis with four steps was performed. This was done because one of the assumptions of a regression is that all variables should be either scale variables or categorical variables with two categories. Mother's educational level in this case was a categorical variable with more than two categories. Field (2009) and Tabachnik and Fidel (2007) indicated that when this is the case, dummy coding of the categorical variable should be done. According to Field (2009), "Dummy coding is a way of representing groups using 0 and 1" (p. 254). The categories for the original variable are coded into separate variables. The number of variables created is one less than the number of categories. A baseline group should be chosen that should be given a value of 0. Therefore, in this case, the baseline group is Brevet level of education. All other dummy variables are compared against the baseline group. According to Field, the dummy variables that we wish to control for should be first forced entered into the regression. Other variables that ought to be controlled for would be added in a next step. Hence, in the first step and to control for mother's educational level, all dummy variables were forced entered. In the second step other covariates were forced entered and in the last step the predictor variables were added in a forward method as their predictive value is being examined when controlling for the covariates.

Influential Cases

Influential cases are those that exert large influence over the parameters of the regression model. The presence of influential cases was assessed through DFbeta. DFbeta is the difference between a parameter estimated using all cases and estimated when one case is excluded. Standardized DFbeta with absolute value above 1 or 2 would be cause for concern. The examination of the Standardized DFbeta's for all the predictors in this analysis indicated that there were no influential cases in the data.

1. **Assumptions of Regression.** Before performing the main regression analysis the assumptions of regression were assessed.

a. Variable type. All variables were scale variables; gender was a categorical variable with two categories. Since mother's educational level had more than two categories, mother's educational level was dummy coded to meet this assumption (as described above).

b. Ratio of cases to IVs. Tabachnick and Fidell (2013) recommend the following as a simple "rule of thumb" when expecting a medium effect sized relationship between the IVs and the DV. To carry out a regression analysis, then the sample size (N) must be larger than (50+8m) where m is the number of IVs. Alternatively, if the point is to test for individual predictors, the sample size must be larger than (104+m) [8]. Ideally, the N for both cases will be calculated and the larger of the two will be used as a sample size since this analysis looks at both the overall regression and the effects of individual IVs. Thus, the optimal sample size of participants should have been between 114 and 130 participants in each group. Only 70 participants were recruited for the ASD group (and 68 in the comparison group), indicating that

[8] In this study, m is 10 as there are 5 IVs: Symptom severity, Parental Satisfaction, Sibling Differential experiences, mother's involvement in education, mother's involvement in intervention. In addition to 5 covariates: birth order, gender (sibling), family size, family income, mother's educational level.

the assumption was not met. Problems with recruitment contributed to failing to meet this assumption and those will be addressed under Limitations in the Discussion section.

c. Normality of IVs and DVs. See section on Normality.

d. Assumption of no Multicollinearity. Looking at the zero order correlation of the independent variables could give a preliminary indication of whether multicollinarity is present among the variables. Any correlation above 0.8 would be cause for concern. In the current analysis there were no correlations above 0.8. Furthermore, Variance Inflation Factor (VIF) coefficients were examined to examine multicollinearity. VIF values above 10 would be a cause of concern. These values indicate whether one of the predictors have a strong linear relationship with any of the other predictors (indicating that both measure the same thing). In the current analyses, VIF values were below 10 indicating that multicollonearity was not a problem.

e. Independence of errors. Another assumption for a regression analysis is the independence of errors. This assumption states that the residuals of the variables should be independent of each other. The Durbin-Watson statistic was used to check whether this assumption was met. The Durbin-Watson statistic is a measure of auto-correlation of errors over the sequence of cases. The Durbin-Watson statistic ranges from 0 to 4. If the value is close to 2, the assumption of independence of errors is met. Values less than 1 and greater than 3 would be cause for concern. In this analysis, the value of Durbin-Watson was 1.97 for the first regression and 2.1 for the second regression, which satisfied the requirements for independence of errors.

f. Normality of errors. To examine whether this assumption was met, a histogram of residuals of the outcome variable, sibling psychological adjustment, was produced and assessed. The residuals of the model should be normally distributed with a mean of zero. That is, the difference between the observed values and predicted values of the model (residuals) should be

close to or equal to zero. The assumption of normality of the residuals was met. The histogram had a bell shaped curve indicating that the residuals were distributed normally (see Figure 1a and 1b).

g. Homoscedasticity of regression slopes. The assumption of homoscedasticity states that at each level of predictors, the variance of residuals should be constant. To know whether the assumption of homoscedasticity is met, a scatterplot of the standardized residuals against the standardized predicted values was examined. Homoscedasticity can be inferred as the graphs looked like a random array of dots which were not making any particular shape or building up on one side of the graph (see Figure 1b and 2b).

3. Main Analysis. For the first multiple regression analysis, the independent variables parental satisfaction, sibling differential parenting, symptom severity, mother's involvement in intervention and mother's involvement in the education of the child with ASD, were force entered into the regression analysis. The results indicated that the model was significantly better than the mean in explaining the variance in the outcome variable , F (5, 59) = 3.21, $p <$ .05. The variance explained by this model was R^2= .21 indicating that the variables in the model predicted 21% of the variability in the outcome variable (sibling psychological adjustment)The adjusted R square for the model was R^2 = .15, indicating that the regression model explained 15% of the variance of the outcome variable at the level of the population. In addition, when moving from the sample to the population, the shrinkage is ΔR^2 = 6.7%; indicating that the regression model would not generalize well to the population (see Table 9a).

Looking at Table 9b, the model revealed that only parental satisfaction and symptom severity were significant predictors of the sibling psychological adjustment. Symptom severity had a standardized beta value of $\beta = .30$, $p < .05$ suggesting that children with ASD with lower

Table 9a
R, R square, Adjusted Rsquare

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1.00	.46[a]	.21	.15	4.79	.21	3.21	5.00	59.00	.01	1.97

Table 9b
Regression Parameters

Model	Standardized Coefficients Beta	Sig.
Constant		.21
Symptom Severity	.30	.02
Mother's Involvement in Education	.20	.27
Mother's Involvement in Intervention	-.20	.24
Differential Parenting	.10	.49
Parental Satisfaction	-.30	.01

symptom severity had siblings with less total difficulties and hence are better psychologically adjusted. Parental satisfaction had a standardized beta value of $\beta = -.30$, $p < .05$ indicating that children with ASD whose mothers reported higher satisfaction in their parental role had children with decreased total difficulties hence a better sibling psychological adjustment. In summary, hypotheses 1b, and 2b were supported.

For the second analysis, which included the hierarchical multiple regression, the demographic variables were controlled for in the first and second step of the regression. As stated earlier, the first step only included mother's educational level and the second step included all covariates. The F-test revealed that the first regression model which contained dummy variables for mother's educational level and which was forced into the regression equation, was not significantly better than the mean in explaining the variance in the outcome variable (sibling psychological adjustment), F (4, 65) = .36, $p > .05$. The F-test for the second model which consisted all the demographic variables that were forced entered into the regression equation, was significantly better than the mean in explaining the variance in the outcome variable (sibling psychological adjustment), F (8, 65) = 2.7, $p < .05$.

Since a forward method was used, the regression model searched for the predictor that best predicts the outcome variable and added it to the model (Field, 2009). The model kept searching for other variables, which improve the ability of the model in predicting the outcome variable (Fields, 2009). For this analysis, two additional regression analyses were obtained. The third model included the variables family size, family income, mother's educational level, birth order, gender of the sibling, and sibling differential parenting. The model was significantly better than the mean in predicting the variance in the outcome variable, F (9, 65) = 3.50, $p < .05$. The third model was better than the second model when predicting the outcome variable.

The last model included the variables parental satisfaction and sibling differential parenting in addition to the previous mentioned demographic variables. The F-test also revealed that the last regression model was significantly better than the mean in explaining the variance in the outcome variable, F (10, 65) = 3.89, $p < .05$. The last model was better than the other models when predicting the outcome variable (sibling psychological adjustment).

Since the first regression was not significant and only contained the dummy variables of mother's educational level, the results will not be further explained. The second regression model which contained the demographic variables (family size, family income, mother's educational level, birth order, gender of the sibling) explained 28% (R^2= .28) of the variance of the outcome variable (sibling psychological adjustment). The third regression model, which contained the demographic variables and sibling differential parenting explained 36% (R^2= .36) of the variance of the outcome variable. The last regression model, which contained the variables (family size, family income, mother's educational level, birth order of the sibling, gender of the sibling, parental satisfaction and sibling differential parenting) explained 41% (R^2= .41) of the variance of the outcome variable (see Table 10a).

The adjusted R square for the second model was R^2 = .18, indicating that the second regression model explained 18% of the variance of the outcome variable at the level of the population. When moving from the sample to the population, the shrinkage ΔR^2 = 10%; indicating that the regression model would not generalize well to the population (see Table 10a). The adjusted R square for the third model was R^2 = .26, indicating that the second regression model explained 26% of the variance of the outcome variable (sibling psychological adjustment) at the level of the population. When moving from the sample to the population, the shrinkage ΔR^2 = 10%; indicating that the regression model would not generalize well to the

Table 10a

R, Rsquare, Adjusted R square

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.15[a]	.02	-.04	5.25	.02	.36	4.00	61.00	.84	
2	.53[b]	.28	.18	4.66	.26	5.12	4.00	57.00	.00	
3	.60[c]	.36	.26	4.44	.08	6.84	1.00	56.00	.01	
4	.64[d]	.41	.31	4.28	.05	5.12	1.00	55.00	.03	2.11

population (see Table 10a). The adjusted R square for the last model was R^2 =0.31, indicating that the last model accounted for 31% of the variability in the outcome variable (sibling psychological adjustment). This suggests that adding the variable parental satisfaction into the regression equation increased the model's ability to explain the variance in the outcome by 5%. When moving from the sample to the population, the shrinkage ΔR^2 = 10%; indicating that the regression model would not generalize well to the population (see Table 10a).

Looking at the table of coefficients (Table 10b), the last model, t-tests revealed that only four variables – family size, family income, sibling differential parenting and parental satisfaction – were found to be significant predictors of the outcome variable (sibling psychological adjustment) (see Table 10b). Among the four significant predictors, family income was the largest predictor of sibling psychological adjustment, followed by family size, sibling differential parenting and parental satisfaction. Family income was a significant negative predictor of the total difficulties that the sibling experienced β= -.39 ($p< .05$). This indicates that the higher the income the family earned per month the better adjusted were the siblings. There was a slight difference between family income and family size whereby family size was the second strongest predictor of sibling adjustment β= .33 ($p< .05$). This indicates that as the family size increased, the total reported difficulties of the siblings increased thus making them less psychologically adjusted. Differential parenting, was also a significant positive predictor of the total difficulties that the sibling experienced, β= .30 ($p< .05$); indicating that the more the sibling experiences differential parenting the more total difficulties they reportedly experienced (poorer sibling psychological adjustment). The predictor, parental satisfaction, had a β= -.26 ($p< .05$); this indicates that the less satisfied the mothers were, the less psychologically adjusted the siblings were.

Table 10b
Regression Parameters

Model		Standardized Coefficient Beta	Sig.
2	Constant		.25
	Education=Baccalaureate	.04	.81
	Education=Bachelor Degrees	.11	.53
	Education=Master Degree	.06	.69
	Education =other	-.01	.93
	Income	-.42	.00
	Family size	.28	.02
	Sibling gender	.20	.10
	Older or younger siblings	.14	.25
3	Constant		.17
	Education= Baccalaureate	-.06	.72
	Education=Bachelor Degrees	.12	.48
	Education=Master Degree	.10	.50
	Education =other	-.02	.88
	Income	-.43	.00
	Family size	.35	.00
	Sibling gender	.23	.05
	Older or younger siblings	.17	.15
	Differential Parenting	.31	.01

Table 10b continued
Regression Parameters

	Constant		.60
	Education= Baccalaureate	-.08	.62
	Education=Bachelor Degrees	.13	.42
4	Education=Master Degree	.10	.50
	Education =other	-.03	.82
	Income	-.39	.00
	Family size	.33	.00
	Sibling gender	.16	.17
	Older or younger siblings	.22	.06
	Differential Parenting	.30	.01
	Parental Satisfaction	-.26	.03

G. Comparing Groups

The study aimed to compare between 4 sets of groups: (a) between female and male siblings of children with ASD (hypothesis 4d); (b) between older and younger siblings of children with ASD (hypothesis 4e); (c) sibling differential parenting between siblings of children with ASD and siblings in the comparison group (hypothesis 3a); and (d) between siblings of children with ASD and siblings of typically developing children (hypothesis 5). Before carrying out t-tests to compare these groups the following assumptions were tested.

1. Assumptions

a. Interval data. An important assumption of t-test is for the dependent variable to be measured at an interval level. In this case the assumption was met since the dependent variable 'Total Difficulties' was measured on a scale from 1 to 3.

b. Assumption of independence. Another important assumption is that of independence of observations. This means that the results provided by each participant should be unrelated and unaffected by the results of other participants. This assumption was assumed, given that the researcher ensured that there was no communication between participants in the course of data collection. Therefore, their answers were independent.

c. Normality. This assumption was tested earlier before adding the data for the typically developing group and has been met. After adding the data of the typically developing siblings, the K-S test was conducted to examine normality of the dependent variable and sibling differential parenting for the typically developing group (as this hypothesis is concerned with both groups). The results revealed that the data were significantly different from a normal distribution for both variables (sibling differential parenting and total difficulties). Sibling differential parenting: $D(68) = .176$, $p < .05$; Total difficulties: $D(68) = .125$, $p < .05$. Therefore,

a Mann-Whitney test, which is the non-parametric alternative to the independent t- test (Fields, 2007), was used for the hypothesis that included siblings of typically developing children.

d. Homogeneity of variance. Homogeneity of variance of the outcome variable was assessed across male and female siblings, across older and younger siblings and across siblings of typically developing child and children with ASD using Levene's tests. The test indicated that Homogeneity of variance was met for all variables, except for sibling differential parenting across siblings of children with ASD and siblings of typically developing children. The following statistics for Levene's test were collected: $F(1, 67) = .048$, $p > .05$, *ns;* $F(1, 65) = .647$, $p > .05$, *ns;* $F(1, 136) = 1.67$, $p > .05$, *ns;* $F(1, 135) = 4.91$, $p < .05$ respectively. This did not pose a problem, however, as a Mann-Whitney test was selected for the examination of differences between siblings of typically developing children and siblings of children with ASD (Field, 2009).

2. Main Analysis

The results of the Mann Whitney test showed that siblings of children with ASD (*Mdn* = 3.46) experienced significantly higher levels of sibling differential parenting than siblings of typically developing children (*Mdn* = 3.00), $U = 1025$, $z = -5.71$, $p < .05$, $r = -0.49$. This is a moderate effect size. Hypothesis 3a was supported (see Table 11).

Furthermore, the second independent t-test showed that on average older siblings (M= 10.32, SE= .85) and younger siblings (M= 11.73, SE= .93) of children with ASD (see Table 11) did not significantly differ on the dependent variable (total difficulties), $t (65) = -1.12$, $p > .05$. Therefore, hypothesis 4e was not supported (see Table 12).

Table 11
Mann Whitney test between ASD and TD group

Mann Whitney Test Statistics	Differential Parenting
Mann-Whitney U	1025
Wilcoxon W	3371
Z	-5.71
Asymp. Sig. (2-tailed)	.00

Table 12
Independent Sample t-test (Birth Order)

		Levene's Test for Equality of Variances				
		F	Sig.	T	df	Sig.
Total Difficulties	Equal Variances Assumed	.21	.65	-1.12	65	.27
	Equal Variances not Assumed			-1.12	64.29	.27

The third independent t-test indicated that on average males (M= 10.31, SE= .80) and females siblings (M= 12.07, SE= .95) of children with ASD (see Table 13) did not significantly differ on the dependent variable, t (67) = -1.42, p> .05. Thus, hypothesis 4d was not supported.

Lastly, results of the Mann-Whitney test showed that siblings of children with ASD (*Mdn* = 11.00) did not significantly differ from siblings of typically developing children (*Mdn* = 9.5), *U*= 2073.5, *z* = -1.31, *ns*, *r*= -0.11 on the outcome variable (sibling psychological adjustment). Hence, there were no differences in the psychological adjustment of siblings in the ASD group and siblings in the typically developing group. Therefore, hypothesis 5 was not supported (see Table 14).

To summarize the results obtained, symptom severity, parent sense of satisfaction, family income and family size were significantly correlated with sibling psychological adjustment. When the independent variables were entered into a multiple regression model, symptom severity and parental sense of satisfaction turned out to be significant predictors of sibling psychological adjustment. However, after controlling for the demographic variables, only sibling differential parenting and parent sense of satisfaction were significant independent variables. Regarding the covariates, family income was the strongest predictor of sibling psychological adjustment followed by family size. There was a significant difference between the ASD group and control group on sibling differential parenting. Sibling differential parenting was more prevalent in the ASD group when compared to the control group.

Table 13

Independent Sample t-test (Gender)

		Levene's Test for Equality of Variances				
		F	Sig.	T	df	Sig. (2-tailed)
Total Difficulties	Equal Variances Assumed	.05	.83	-1.42	67	.16
	Equal Variances not Assumed			-1.42	61.54	.16

Table 14
Mann Whitney test between ASD and TD group

Mann Whitney Test Statistics	Total Difficulties
Mann-Whitney U	2073.50
Wilcoxon W	4419.50
Z	-1.31
Asymp. Sig. (2-tailed)	.191

CHAPTER VIII

DISCUSSION

The aim of this research study was to examine the predictors of the psychological adjustment of siblings of children with ASD. This aim was of importance because ASD rates are drastically on the rise with prevalence rates of 1 in 68 children (CDC, 2014). Therefore, more children are having siblings diagnosed with ASD. In addition, there is no published literature in Lebanon concerning siblings of children with ASD. Examining sibling psychological adjustment could offer insights into whether these children need psychological support to cope with a chronic condition affecting a close member of their family, their siblings. Looking at the literature published in the West, the results have been controversial and significant predictors have not been examined together; hence, another aim of this study was to look at these salient variables together and analyze each variable's contribution in predicting perceived sibling adjustment.

It is important to note that the results can only be attributed to this particular sample and does not generalize to all Lebanese siblings of children with ASD as the sample size used in the study was small. However, despite the fact that a small sample was recruited it is important to note that this study is the first of its kind to offer preliminary information on the variables of interest. This study also helped shed light on limitations associated with conducting research in Lebanon and people's attitudes in participating and supporting research studies.

A. Interpretations of the Findings

In the present study symptom severity was correlated with and served as a predictor for perceived psychological adjustment of siblings of children with ASD. This is consistent with previous findings (Benson & Karlof, 2008; Hastings, 2007; Meyer, Ingersoll & Hambrick,

2011; Mohammadi & Zarafshan, 2014.) A child with ASD who has more severe symptoms would require more attention, time and care from their family members. Depending on the increased demand of care and attention required as a result of the severity of the symptoms of the child with ASD, increased sibling differential parenting might also be evident. With increasing demands, it is conceivable that the siblings would experience more stress and challenges in their daily lives. Prior research has shown that the siblings of a child with a disability tend to be more vulnerable to the adverse effects of family stress and conflict (Lynch et al., 1993; Nixon & Cummings, 1999). This in turn might result in poorer sibling psychological adjustment. However, after partialling out for the effects of other demographic variables, this variable was no longer a significant predictor. This will be further explained in the below sections.

Another significant result of the present study indicated that parental satisfaction, in this case the mother's sense of satisfaction, was correlated with and served as a predictor for perceived sibling psychological adjustment. This finding is consistent with those obtained by Hesse et al. (2013). This finding demonstrated that mothers who reported feeling motivated, less frustrated, and less anxious about being a parent, viewed the sibling as not having significant psychological difficulties. Hesse et al.'s (2013) explained that mothers who were satisfied in their parental role viewed siblings in a more positive light. Prior research (e.g., Dukmak, 2009) has also found that parents of children with disabilities who were satisfied in their role as parents used problem-focused coping strategies. This in turn made the environment less challenging and more pleasant for the sibling (Hassall, Rose, & McDonald, 2005) hence, reducing stress levels in the family and resulting in better sibling psychological adjustment.

Higher levels of family income were correlated and predicted better psychological adjustment of the sibling. This finding is consistent with the literature (Hesse et al., 2013, Kaminsky &Dewey, 2002, Tomeny et al., 2011, Orsmond et al., 2009). The need for formal resources is of great importance when looking at the psychological adjustment of siblings of children with ASD. It is possible that with lower family income, parental stress increases as parents would not have access to all the necessary resources, which might in turn lead to sibling differential parenting. This in turn makes parents feel overwhelmed and anxious as they are less likely to satisfy all the needs and demands of their children. Hence, if the source of the problem were reversed – or addressed – with greater forms of formal support, there would be an alleviation of parental stress, hence a decrease in sibling differential parenting, decreased parental satisfaction, and, in turn, siblings of children with ASD would have better psychological adjustment. More emphasis on family income is discussed below.

Interestingly, family size was correlated with sibling psychological adjustment. However, the correlation had a direction opposite to what had been hypothesized. Prior studies have found that having other siblings helps buffer against stressful experiences that the child goes through. These siblings are able to relate and talk about the stressful aspects of having a sibling with ASD (Kaminsky & Dewey, 2002). It seems that when western nuclear families increase in size, the social support networks also increase and hence, the siblings are better psychologically adjusted. However, this was not the case in the current study. One could argue that in the case of Lebanon, increased family size indicates that families are in need of more resources to be able to raise their children. i.e., more educational fees, more daily resources, etc. In addition, there is more demand on the parent's attention, care and increased household workload. Parenting stress has been observed to increase with the number of children at home (Ostberg &

Hagekull, 2000). Giallo and Gavidia-Payne (2006) indicated that the relation between family income and the risk of sibling adjustment is mediated by parental stress level and family functioning. Therefore, with more demands on mothers,higher need of formal resources, and increased stress levels, it is likely that the mothers feel less satisfied in their parenting role leading to a poorer psychological adjustment in the sibling of the child with ASD.

As predicted, the results of the t-test indicated that sibling differential parenting was more prevalent in families of children with ASD. This finding is consistent with the literature (Corter, Pepler, Stanhope and Abramovitch, 1992; Mchale & Pawletko 1987). The sibling differential parenting is most likely due to the continuous support and needs that a child with ASD requires when compared to a typically developing child. Sibling differential parenting was also a predictor of sibling psychological adjustment. With increased differential parenting, the sibling experienced increased difficulties making him or her less psychologically adjusted. It is conceivable that mothers that are very concerned with the child with ASD are more likely to parentify the other sibling. In other words, mothers might demand more household chores from the sibling, have higher expectations for the sibling and spend less time with them. Therefore,, mothers are most likely less attentive to the psychological needs of the sibling. The sibling in this case is faced with increased stress in his/her daily lives. This in turn results in poorer sibling psychological adjustment This is consistent with previous studies (Kowal,et al., 2002), but it should be interpreted with caution because the instrument used to measure sibling differential parenting in the current study had poor reliability.

Furthermore, the involvement of mothers in the education and intervention of children with ASD did not correlate nor predict sibling psychological adjustment. This finding contradicts what was found in the literature in terms of correlations (Benson & Karlof, 2008; Hesse et al.,

2013) but is consistent with Hesse et al.'s findings regarding the prediction. Yet it is a reflection of the limited autism resources and scarcity of interventions available in Lebanon (Daou, 2014; Obeid & Daou, 2015; Obeid et al., 2015). Irrespective of the extent to which mothers were involved in their children's education and intervention, the limited availability of interventions overshadows the level of maternal involvement, and in turn, the psychological adjustment of the siblings.

Moreover, birth order, sibling's gender and mother's educational level did not have any significant relationship with the sibling psychological adjustment. In addition, there were no differences between younger and older siblings on their psychological adjustment. This is contrary to what has been found in the literature (Hesse et al. 2013; Orsmond et al. 2009; Shivers et al. 2012). It is also important that these findings are interpreted with caution, given that this is the mother's perspective on the sibling's adjustment and social desirability might have played a role. Macks and Reeve (2006) found that parents of children with ASD tend to have markedly different perspectives from the typically developing sibling on the psychological adjustment. Macks and Reeve (2006) indicated that it is better to have multiple respondents when studying siblings of children with ASD as the discrepancy between self-reports and parents' report is of importance. In addition, it is also plausible that the sample size was not large enough to detect a difference between male and female siblings and younger and older siblings.

Regarding the mother's educational level, having a higher degree did not influence the sibling's psychological adjustment in the current study. The mother's education does not provide her with the necessary education and interventions that could be used in parenting. Thus, the mother's education will not influence the sibling psychological adjustment. The most

salient demographic factors that influenced the psychological adjustment of sibling of children with ASD regardless of gender or mother's educational level were family income and family size.

After partialling out for the covariates, symptom severity was no longer a significant predictor, which was consistent with Tomeny et al.'s (2012) findings. Another study by Meyer et al (2011) indicated that symptom severity was mediated by maternal depression when predicting sibling psychological adjustment. However, in this study, maternal depression was not assessed. It might be beneficial to look at maternal depression and its relationship with sibling psychological adjustment. Mothers who are having depressing symptoms as a result of the severity of ASD in their child are also less likely to be satisfied in their parental role. These mothers are more likely to feel overwhelmed and frustrated in meeting the demands of all their children. This in turn makes them less likely to be attentive to the psychological needs of their children resulting in poorer sibling psychological adjustment. It is also important to note here that the sample size required for this regression model requires a minimum of 130 participants as more variables were included. Given that the sample included 70 participants, it is plausible that the model did not have enough power to detect a significant relationship between the variables in the presence of other variables.

Of importance is that the strongest predictor of sibling psychological adjustment was family income. This is interesting for professionals working with families with a child with ASD. Most professionals look for psychological interpretations of the individual's current functioning. However, it is important to note that having formal resources and support will most likely enhance the psychological adjustment of siblings. Since most qualified and higher quality interventions, trainings and education for children with ASD are not provided at a low cost in

Lebanon, having these formal resources will allow families obtain these intervention and education. This in turn would help families of children with ASD cope better and the family might experience lower stress levels. The families would be better able to face the challenges of their child with ASD. In turn, sibling differential parenting would also decrease. This consequently would make the mothers more satisfied in their role, resulting in a better sibling psychological adjustment. The need of formal resources provided by the government for adequate interventions of children with ASD is of great importance as it is likely to have a positive ripple effect on the whole family.

Lastly, siblings of children with ASD and siblings of typically developing children did not significantly differ in terms of their psychological adjustment. It is important to interpret this with caution as social desirability effects were not controlled for. In addition, the mothers were the ones to report these findings; it is possible that siblings would have a different perspective when assessing their psychological adjustment. Another reason for not detecting a significant difference between the two groups is that the sample size was not large enough reducing its power to detect significant relationships. Moreover, the SDQ that was used to assess sibling psychological adjustment had a low internal consistency and might have not provided us with a clear picture of the difficulties that the siblings are going through.

However, this result is also consistent with some studies (e.g., Brewton et al., 2012; Tomeny, Barry & Bader, 2012). Despite the fact that there were no differences between groups on the outcome variable, when looking at the mean of the scores across groups, siblings of children with ASD had a higher mean compared to siblings of typically developing children. Hence, before concluding that siblings of children with ASD in Lebanon did not differ on their psychological adjustment, it is important that this finding must be first replicated with a larger

sample, second by obtaining information from the siblings themselves about their psychological adjustment, and finally by using better child report measures to asses sibling psychological adjustment.

B. Limitations

A major limitation of the study is the sample size recruited, which restricts the generalizability of the results. To begin with, the size of the ratio of cases to IV did not meet the recommendation by Tabachnik and Fidell's (2007) statistical equation. The small sample size of the study (70 mothers of children with ASD and 68 mothers of typically developing children) was the result of the recruitment difficulties that have also been observed in other recent research studies in Beirut concerned with autism (e.g., Daou, 2014; Fares, 2012; Obeid & Daou, 2015). This limited the ability of the analysis to detect significant relationships between variables. In addition, some variables violated the assumption of normality due to the small sample size of the study.

Out of 15 schools/NGOs that were contacted, only 6 accepted to disseminate recruitment flyers, and this was followed with a very poor response rate from the mothers despite the many efforts. Nevertheless, even when behavioral therapists who had good working relationships with families of children with ASD invited mothers to participate in the study, only a few of them showed interest in participating. Most of the mothers, as reported by the schools/NGOs had complained that an extensive amount of research studies has been carried out on this population, apparently with the perception that there were no direct benefits for them or their children.

Similarly, despite the fact that some posters were hung up in clinics and departments, and Facebook posts were shared on pages concerned with ASD awareness, only two participants showed interest in participating, following those recruitment methods. This could

be due to the virtual absence of a research culture in Lebanon (Obeid & Daou, 2015). Not only was this observed with the mothers of children with ASD but also mothers of typically developing children. Mothers of typically developing children, who were recruited from malls and restaurants, were very resistant at first, but after informing them about the aim of the study, only a few became interested in completing the survey battery. Mothers of typically developing children were recruited using the snowball sampling technique due to the poor response of people in cafes and restaurants.

It is noteworthy that in other Western studies that looked at siblings of children with ASD, the sample size recruited was close to the sample size of the current study (e.g., Meyer et al. 2011, 70 participants; Hastings & Petalas, 2013, 94 participants; Rivers & Stoneman, 2008, 48 participants, Tomeny et al., 2012, 42 participants). Therefore, it seems that this limitation is not only a concern in the present study, but rather has been experienced generally when recruiting mothers of children with autism for research.

Another critical limitation of the study is that it included self-report measures. Social desirability is a phenomena whereby participants responses reflect their tendency to be viewed favorably by others rather than describing their actual experiences (Christensen, Johnson, & Turner, 2011). It is plausible that participants have engaged in socially desirable behaviors. It is likely that mothers did not want to view themselves – or to be viewed – as differentiating between their children, which might have also explained the relatively low level of child problems reported.

Additionally, one other limitation of the study is the poor reliability of the SDQ and the SIDE scales. For the case of the SDQ, it is most likely that social desirability and small sample size influenced the internal consistency of the scale. For example, the strength and difficulties

questionnaire has been used earlier with a Palestinian population of 406 participants with an age range between 11 to 14 years. The internal consistency and reliability of the SDQ was in the acceptable to good range with a Cronbach's alpha of .72 (Khamis, 2013). However, the children, siblings of children with a disability, were the ones who filled the questionnaires. It is likely that those participants were able to report their difficulties more precisely than their parents would. In this study and as explained earlier, it is likely that the mothers were not fully aware of the siblings' psychological needs as they were more concerned and more attentive to the difficulties of their children with ASD. It is also important to note that when looking at the reliability of the SDQ in the typically developing sample, the reliability increases to a Cronbach's alpha of .60.

Furthermore, Thabet, Stretch, and Vostanis, (2000), indicated that when carrying out the factor structure analysis of the SDQ and after collecting data from parents and children at a Gaza strip (N=322), the results showed that its factors operated similarly in the UK and Arab samples; only a few of the 25 items did not load as highly on the general factors, i.e. distractability, feeling scared, feeling unhappy, stealing, and being picked on or bullied. However, parents' perception of the emotional problems in preschool children was the main difference between the Arab and UK sample (Thabet, Stretch, & Vostanis, 2000). Since the sample of this study included children in the age range of 4 to 18 and the mothers were the ones to rate the scale, it is most likely that scale was not able to provide us with a clear picture of the emotional difficulties specifically for the age group of children between 4 and 6 years which poses a limitation on the study.

Regarding the modified form of the SIDE, which measures sibling differential parenting, an extended literature search was conducted before deciding on using this instrument. However,

the search yielded no results of scales that measured sibling differential parenting from the parent's perspective. Most instruments asked the child to rate the level of sibling differential parenting that he or she experienced. This was not possible for this study as it had a time limit factor. Hence, the modified SIDE form was adopted.

Another limitation of this study is that a non-experimental research design was used. Causal relationships cannot be inferred (Christensen et al., 2011). In addition, a limitation worth stating is that due to both time limitations and difficulty in recruiting mothers of children with ASD, a pilot study was not carried out. If a pilot study were carried out, the sample size would have been further reduced.

C. Future Directions

A call for more studies on this topic is of importance. It is evident that many of the limitations in the current study revolved around the small sample size, which was the direct result of the recruitment difficulties. A recommendation that could be given for future studies is the dedication of more time and effort while recruiting participants from this population, particularly to find ways to access the population directly, and not have to rely on gatekeepers (e.g., school principals, clinicians, therapists). More critically, future research would greatly benefit from obtaining data from the siblings themselves and from using better child-based measures of sibling differential parenting and sibling psychological adjustment.

Moreover, it is also important that future studies control for social desirability bias, for example by examining the relationship between social desirability and the responses of the participants. Future studies might find it useful to look at the effects of parental stress and maternal depression on the sibling psychological adjustment. In addition, it would be of interest

to know how parental stress could mediate the relationship between family size and sibling psychological adjustment.

D. Conclusion

Despite its limitations, this study contributed to our knowledge of predictors of sibling psychological adjustment when having a brother or sister with ASD, all based on maternal perceptions. Parental satisfaction and sibling differential parenting were significant predictors of sibling psychological adjustment, as was family income and family size when partialling out for other demographic variables. Implications for professionals working with families affected by autism include assessing parental satisfaction, discussing strategies that might help increase parental satisfaction and sibling psychological adjustment. Professionals might also wish to offer additional support for larger families, as the greater number of siblings in those households might call for additional coping strategies. Finally, it might also be important for professionals to assess for sibling differential parenting in families affected by autism, and to discuss with mothers strategies to reduce sibling differential parenting for better sibling psychological adjustment.

References

Abrams, M. S. (2009). The well sibling: Challenges and possibilities. *American Journal of Psychotherapy, 63,* 305–317. http://europepmc.org/abstract/MED/20131740

Akoury-Dirani, L., Alameddine, M., & Salamoun, M. (2013). Validation of the Lebanese childhood autism rating scale–second edition–high functioning version. *Research in Autism Spectrum Disorders*, *7*(11), 1332-1338. doi:10.1016/j.rasd.2013.05.004

Amr, M., Raddad, D., El-Mehesh, F., Mahmoud, E.H., El-Gilany, A.H. (2011). Sex differences in Arab children with Autism Spectrum Disorders. *Research in Autism Spectrum Disorders*, *5*, 1343-1350. doi: 10.1016/j.rasd.2011.01.015

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). Washington, DC: Author.

Autism Prevalence. (n.d.). In *Centers for Disease Control and Prevention online*. Retrieved from http://www.cdc.gov/ncbddd/autism/data.html

Barak-Levy, Y., Goldstein, E., & Weinstock, M. (2010). Adjustment characteristics of healthy siblings of children with autism. *Journal of Family Studies, 16*(2), 155-164. **doi:**10.5172/jfs.2014.20.1.2

Baumrind D. (1971). Current patterns of parental authority. *Developmental Psychology Monograph*, *4*, 1–103. http://psycnet.apa.org/journals/dev/4/1p2/1/

Bebko, J. M., Konstantareas, M. M., & Springer, J. (1987). Parent and professional evaluations of family stress associated with characteristics of autism. *Journal of Autism and Developmental Disorders, 17*(4), 565–576. doi:10.1007/BF01486971

Benson, P. R., & Karlof, K. L. (2008). Child, parent, and family predictors of latter adjustment in siblings of children with autism. *Research in Autism Spectrum Disorders*, *2*(4), 583-600. doi:10.1016/j.rasd.2007.12.002

Blumberg, S. J., Bramlett, M. D., Kogan, M. D., Schieve, L. A., Jones, J. R., & Lu, M. C. (2013). Changes in prevalence of parent-reported autism spectrum disorder in school-aged US children: 2007 to 2011–2012. *National Health Statistics Reports, 65*(20), 1-7. http://www.sased.org/vimages/shared/vnews/stories/513f815505c21/AUTISM%20National%20Health%20Statistics%203%2020%2013.pdf

Brewton, C. M., Nowell, K. P., Lasala, M. W., & Goin-Kochel, R. P. (2012). Relationship between the social functioning of children with autism spectrum disorders and their siblings' competencies/problem behaviors. *Research in Autism Spectrum Disorders,6*(2), 646-653. doi:10.1016/j.rasd.2011.10.004

Chaidez, V., Hansen, R. L., & Hertz-Picciotto, I. (2014). Gastrointestinal problems in children with autism, developmental delays or typical development. *Journal of Autism and Developmental Disorders*, *44*(5), 1117-1127. doi:10.1007/s10803-013-1973-x

Chan, A. S., Han, Y. M., Leung, W. W. M., Leung, C., Wong, V. C., & Cheung, M. C. (2011). Abnormalities in the anterior cingulate cortex associated with attentional and inhibitory control deficits: a neurophysiological study on children with autism spectrum disorders. *Research in Autism Spectrum Disorders*, *5*(1), 254-266. doi:10.1016/j.rasd.2010.04.007

Christensen, L. B., Johnson, B., & Turner, L. A. (2011). *Research Methods, Design, and Analysis*.(12th Ed.). Boston, MA: Pearson Education Inc.

Corter, C., Pepler, D., Stanhope, L., & Abramovitch, R. (1992). Home observations of mothers and sibling dyads comprised of Down's syndrome and non-handicapped children. *Journal of Behavioral Science, 24*, 1–13. http://dx.doi.org/10.1037/h0078697

Daniels, D., & Plomin, R. (1985). Differential experience of siblings in the same family. *Developmental Psychology, 21(5),* 747-760. http://dx.doi.org/10.1037/0012-1649.21.5.747

Daou, N. (2014). Conducting behavioral research with children attending nonbehavioral intervention programs for autism: The case of Lebanon. *Behavior Analysis in Practice, 7*(2), 78-90. doi: 10.1007/s40617-014-0017-0

Dempsey, A. G., Llorens, A., Brewton, C., Mulchandani, S., Goin-Kochel, R. P. (2012). Emotional and behavioral adjustment in typically developing siblings of children with autism spectrum disorders. *Journal of Autism Developmental Disorder, 42,* 1393-1402. doi: 10.1007/s10803-011-1368-9

De Pauw, S. S., Mervielde, I., Van Leeuwen, K. G., & De Clercq, B. J. (2011). How temperament and personality contribute to the maladjustment of children with autism. *Journal of Autism and Developmental Disorders, 41*(2), 196-212. doi: 10.1007/s10803-010-1043-6

Department of Health. (1999). *Clinical practice guideline for Autism/Pervasive Developmental Disorders: Assessment and intervention for young children (age 0-3 years).* Albany, NY: Early Intervention Program, New York State Department of Health.

Department of Health and Human Services. (1999). Mental health: A report of the surgeon general. Rockville, MD: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, National Institutes of Health, National Institute of Mental Health.

Diehl, J. J., & Paul, R. (2012). Acoustic differences in the imitation of prosodic patterns in children with autism spectrum disorders. *Research in Autism Spectrum Disorders, 6*(1), 123-134. doi:10.1016/j.rasd.2011.03.012

Dirani, L. A., & Salamoun, M. (2014). Correlates of early assessment of neurodevelopmental disorders in Lebanon. *Early Child Development and Care, 184*(1), 63-72. doi:10.1080/03004430.2013.772992

Dukmak, S. (2009). Parent adaptation to and parenting satisfaction with children with intellectual disability in the United Arab Emirates. *Journal of Intellectual and Developmental Disability*, *34*(4), 324-328. doi:10.3109/13668250903286190

Elsabbagh, M., Divan, G., Koh, Y. J., Kim, Y. S., Kauchali, S., Marcín, C., & Fombonne, E. (2012). Global prevalence of autism and other pervasive developmental disorders. *Autism Research*, *5*(3), 160-179. doi: 10.1002/aur.239

Fares, S. N. (2012). *Affective behavior among children with autism: assessing child performance and parent-teacher reports in Lebanon* (Unpublished master's thesis). Beirut, Lebanon: American University of Beirut.

Gauthier, J., Siddiqui, T., Huashan, P., Yokomaku, D., Hamdan, F., Champagne, N, et al. (2011). Truncating mutations in NRXN2 and NRXN1 in autism spectrum disorders and schizophrenia. *Human Genetics*, *130*(4), 563-573. doi: 10.1007/s00439-011-0975-z

Giallo, R., & Gavidia-Payne, S. (2006). Child, parent and family factors as predictors of adjustment for siblings of children with a disability. *Journal of Intellectual Disability Research, 50*(12), 937-948. doi: 10.1111/j.1365-2788.2006.00928.x

Gill, A. R. (2001). Interventions for autism. *The Journal of the American Medical Association, 286,* 670-671. Retrieved from http://jama.jamanetwork.com/journal.aspx

Goodman, R. (2001). Psychometric properties of the Strengths and Difficulties Questionnaire. *Journal of the American Academy of Child and Adolescent Psychiatry, 40,* 1337 – 1345. http://dx.doi.org/10.1097/00004583-200111000-00015

Gold, N. (1993). Depression and social adjustment in siblings of boys with autism. *Journal of Autism and Developmental Disorders, 23,* 147–163. doi: 10.1007/BF01066424

Griffith, G. M., Hastings, R. P., & Petalas, M. A. (2014). Brief Report: Fathers' and Mothers' Ratings of Behavioral and Emotional Problems in Siblings of Children with Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*, *44*(5), 1230-1235. doi: 10.1007/s10803-013-1969-6

Hajjar, M., & Richa, S. (2008). Obsessions and compulsions in autistic disorder. *Annales Medico Psychologigues*, *116*(7), 528-532. doi: 10.1016/j.amp.2005.09.033

Hamadé, A., Salameh, P., Medlej-Hashim, M., Hajj-Moussa, E., Saadallah-Zeidan, N., & Rizk, F. (2013). Autism in children and correlates in Lebanon: A pilot case-control study. *Journal of Research in Health Sciences*, *13*(2), 119-1024. http://jrhs.umsha.ac.ir/index.php/JRHS/article/view/872

Hastings, R. P. (2007). Longitudinal relationships between sibling behavioral adjustment and behavior problems of children with developmental disabilities. *Journal of Autism and Developmental Disorders, 37*, 1485–1492. doi: 10.1007/s10803-006-0230-y

Hastings, R. P., & Petalas, M. A. (2013). Self-reported behaviour problems and sibling relationship quality by siblings of children with autism spectrum disorder. *Child: Care, Health and Development, 40*(6), 833-839. doi:10.1111/cch.12131

Hassall, R., Rose, J., & McDonald, J. (2005). Parenting stress in mothers of children with an intellectual disability: The effects of parental cognitions in relation to child characteristics and family support. *Journal of Intellectual Disability Research, 49*(6), 405-418. doi: 10.1111/j.1365-2788.2005.00673.x

Hesse, T. L., Danko, C. M., & Budd, K. S. (2013). Siblings of children with autism: Predictors of adjustment. *Research in Autism Spectrum Disorders,7*(11), 1323-1331. http://dx.doi.org/10.1016/j.rasd.2013.07.024

Hilton, C. L., Harper, J. D., Kueker, R. H., Lang, A. R., Abbacchi, A. M., Todorov, A., & LaVesser, P. D. (2010). Sensory responsiveness as a predictor of social severity in children with high functioning autism spectrum disorders. *Journal of Autism and Developmental Disorders, 40*(8), 937-945. doi: 10.1007/s10803-010-0944-8

Jacobson, J. W. (2000). Converting to a behavior analysis format for autism services: Decision-making for educational administrators, principals, and consultants. *The Behavior Analyst Today, 1,* 6-16. Retrieved from http://www.baojournal.com/

Johnston, C., & Mash, E. (1989). A measure of parenting satisfaction and efficacy. *Journal of Clinical Child Psychology, 18*, 167-175. doi: 10.1207/s15374424jccp1802_8

Kalkan, M. (2008). The relationship of psychological birth order to irrational relationship beliefs. *Social Behavior and Personality,* 36(4), 455-466. http://dx.doi.org/10.2224/sbp.2008.36.4.455

Khamis, V. (2013). Psychosocial adjustment in siblings of children with war related injuries. *International Journal of Special Education*, *28*(1), 69-71. http://eric.ed.gov/?id=EJ1013691

Kaminsky, L. & Dewey, D. (2002). Psychosocial adjustment in siblings of children with autism. *Journal of Child Psychology and Psychiatry, 43*(2), 225–232. doi: 10.1111/1469-7610.00015

Kowal, A., Kramer, L., Krull, J.L., & Crick, N.R. (2002). Children's perceptions of the fairness of parental preferential treatment and their socioemotional well-being. *Journal of Family Psychology, 16,* 297-306. http://dx.doi.org/10.1037/0893-3200.16.3.297

Maleki-Tehrani, M. (2006). *Sibling Relationships and Family Dynamics in Families with a Child with Tourette Syndrome.* (Unpublished doctoral thesis). Ontario, Canada: University of Waterloo.

Mayes, S. D., Calhoun, S. L., Murray, M. J., Ahuja, M., & Smith, L. A. (2011). Anxiety, depression, and irritability in children with autism relative to other neuropsychiatric disorders and typical development. *Research in Autism Spectrum Disorders*, *5*(1), 474-485. https://uwspace.uwaterloo.ca/handle/10012/2822

Mascha, K., & Boucher, J. (2006). Preliminary investigation of a qualitative method of examining siblings' experiences of living with a child with ASD. *The British Journal of Development Disabilities*, *52*(102), 19-28. http://dx.doi.org/10.1179/096979506799103659

Macks, R. J., & Reeve, R. E. (2007). The adjustment of non-disabled siblings of children with autism. *Journal of Autism and Developmental Disorders*, *37*(6), 1060-1067. doi: 10.1007/s10803-006-0249-0

Mates, T. E. (1990). Siblings of autistic children: Their adjustment and performance at home and in school. *Journal of Autism and Developmental Disorders*, *20*(4), 545–553. doi: 10.1007/BF02216059

McHale, S. M., & Pawletko, T. M. (1992). Differential treatment of siblings in two family contexts. *Child Development, 63,* 68–81. doi: 10.1111/j.1467-8624.1992.tb03596.x

Meirsschaut, M., Roeyers, H., & Warreyn, P. (2010). Parenting in families with a child with autism spectrum disorder and a typically developing child: Mothers' experiences and cognitions. *Research in Autism Spectrum Disorders*, *4*(4), 661-669. doi:10.1016/j.rasd.2010.01.002

Melnyk, S., Fuchs, G. J., Schulz, E., Lopez, M., Kahler, S. G., Fussell, J. J., ... & James, S. J. (2012). Metabolic imbalance associated with methylation dysregulation and oxidative damage in children with autism. *Journal of Autism and Developmental Disorders*, *42*(3), 367-377. 10.1007/s10803-011-1260-7

Meunier, J. C., Roskam, I., Stievenart, M., van de Moortele, G., Browne, D. T., & Kumar, A. (2011). Externalizing behavior trajectories: The role of parenting, sibling relationships and child personality. *Journal of Applied Developmental Psychology, 32*(1), 20-33. doi:10.1016/j.appdev.2010.09.006

Meyer, K. A., Ingersoll, B., & Hambrick, D. Z. (2011). Factors influencing adjustment in siblings of children with autism spectrum disorders. *Research in Autism Spectrum Disorders, 5*(4), 1413-1420. doi:10.1016/j.rasd.2011.01.027

Mohammadi, M. R., & Zarafshan, H. (2014). Family function, parenting style and broader autism phenotype as predicting factors of psychological adjustment in typically developing siblings of children with Autism Spectrum Disorders. *Iranian Journal of Psychiatry, 9*(2), 55-63. http://ijps.tums.ac.ir/index.php/ijps/article/viewArticle/788

Nixon, C. L., & Cummings, E. M. (1999). Sibling disability and children's reactivity to conflicts involving family members. *Journal of Family Psychology, 13*(2), 274. http://dx.doi.org/10.1037/0893-3200.13.2.274

Obeid, R., & Daou, N. (2015). The effects of coping style, social support, and behavioral problems on the well-being of mothers of children with Autism Spectrum Disorders in Lebanon. *Research in Autism Spectrum Disorders, 10*, 59-70. doi:10.1016/j.rasd.2014.11.003

Obeid, R., Daou, N., DeNigris, D., Shane-Simpson, C., Brooks, P. J., & Gillespie-Lynch, K. (2015). A cross-cultural comparison of knowledge and stigma associated with Autism Spectrum Disorder among college students in Lebanon and the United States. *Journal of Autism and Developmental Disorders, 45*(11), 3520-3536. doi: 10.1007/s10803-015-2499-1

Orsmond, G. I., Kuo, H. Y., & Seltzer, M. M. (2009). Siblings of individuals with an autism spectrum disorder: Sibling relationships and wellbeing in adolescence and adulthood. *Autism, 13*(1), 59-80. doi: 10.1177/1362361308097119

Östberg, M., & Hagekull, B. (2000). A structural modeling approach to the understanding of parenting stress. *Journal of Clinical Child Psychology, 29*(4), 615-625. doi:10.1207/S15374424JCCP2904_13

Pan, C. Y. (2011). The efficacy of an aquatic program on physical fitness and aquatic skills in children with and without autism spectrum disorders. *Research in Autism Spectrum Disorders, 5*(1), 657-665. doi:10.1016/j.rasd.2010.08.001

Petalas, M. A., Hastings, R. P., Nash, S., Hall, L. M., Joannidi, H., & Dowey, A. (2012). Psychological adjustment and sibling relationships in siblings of children with autism spectrum disorders: Environmental stressors and the broad autism phenotype. *Research in Autism Spectrum Disorders, 6*(1), 546-555. doi:10.1016/j.rasd.2011.07.015

Rivers, J. W., & Stoneman, Z. (2008). Child temperaments, differential parenting, and the sibling relationships of children with autism spectrum disorder. *Journal of Autism and Developmental Disorders, 38*(9), 1740-1750. doi: 10.1007/s10803-008-0560-z

Roeser, R., Eccles, J., & Strobel, K. (1998). Linking the study of schooling and mental health: Selected issues and empirical illustrations at the level of the individual *Educational Psychologist,* 33, 153−176. doi: 10.1207/s15326985ep3304_2

Rosenwasser, B., & Axelrod, S. (2001). The contributions of applied behavior analysis to the education of people with autism. *Behavior Modification, 25,* 671-677. Retrieved from http://online.sagepub.com/

Rozga, A., Hutman, T., Young, G. S., Rogers, S. J., Ozonoff, S., Dapretto, M., & Sigman, M. (2011). Behavioral profiles of affected and unaffected siblings of children with autism: Contribution of measures of mother–infant interaction and nonverbal communication. *Journal of Autism and Developmental Disorders*, *41*(3), 287-301. doi: 10.1007/s10803-010-1051-6

Shivers, C. M., Deisenroth, L. K., & Taylor, J. L. (2013). Patterns and predictors of anxiety among siblings of children with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, *43*(6), 1336-1346. doi:10.1007/s10803-012-1685-7

Tabachnick, B. G., & Fidell, L. S. (2013). *Using Multivariate Statistics*. New Jersey: Pearson Education, Inc

Thabet, A. A., Stretch, D., & Vostanis, P. (2000). Child mental health problems in Arab children: application of the strengths and difficulties questionnaire. *International Journal of Social Psychiatry*, *46*(4), 266-280. doi: 10.1177/002076400004600404

Tomeny, T. S., Barry, T. D., & Bader, S. H. (2012). Are typically-developing siblings of children with an autism spectrum disorder at risk for behavioral, emotional, and social maladjustment?. *Research in Autism Spectrum Disorders, 6*(1), 508-518. doi:10.1016/j.rasd.2011.07.012

Verte, S., Roeyers, H., & Buysse, A. (2003). Behavioural problems, social competence, and self concept in siblings of children with autism. *Child: Care, Health & Development, 29*(3), 193-205. doi: 10.1046/j.1365-2214.2003.00331.x

Zhang, X., Lv, C., Tian, J., Miao, J., Xi, W., Hertz-Picciotto, I., et al.(2010). Prenatal and perinatal risk factors for autism in China. *Journal of Autism Developmental Disorder, 40*(11), 1311-1321. doi: 10.1007/s10803-010-0992-0

Figure 1a
Histogram of Standardized Residuals

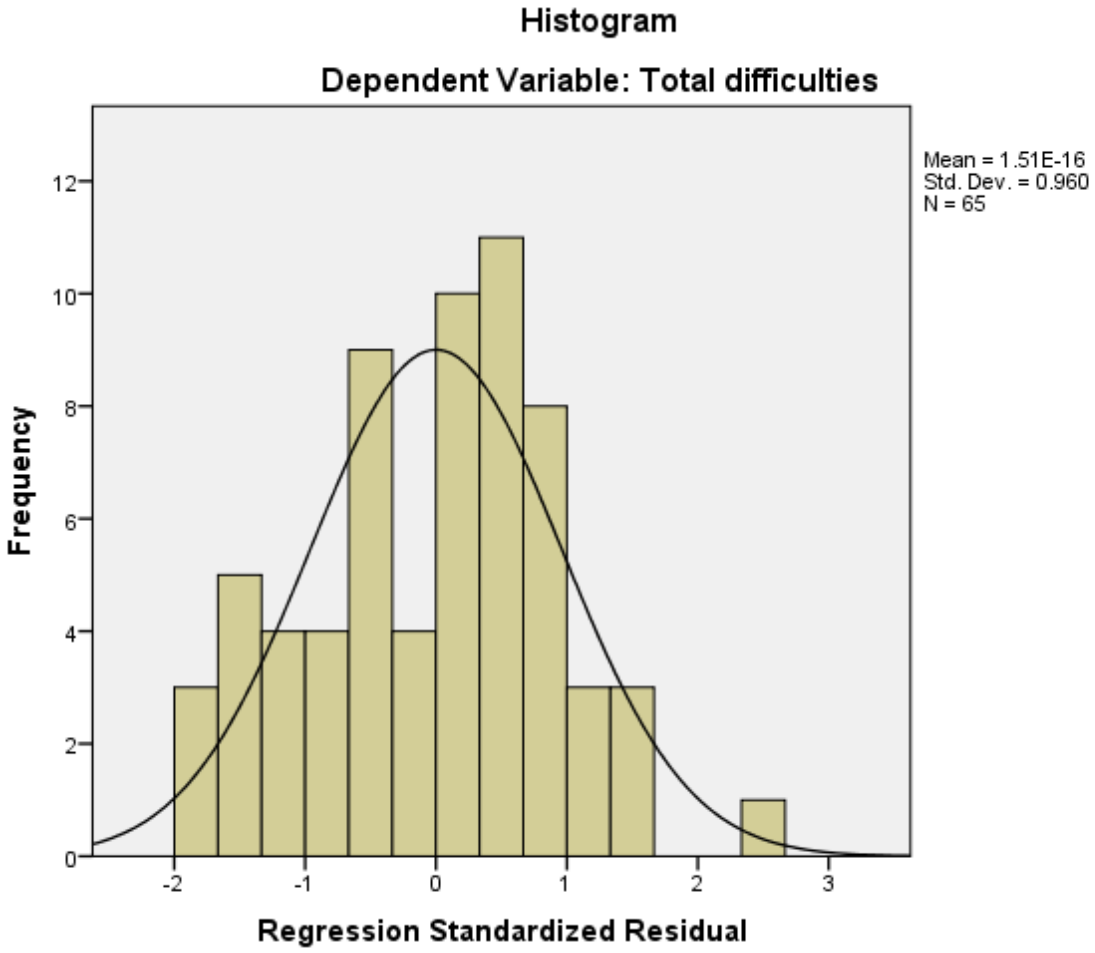


Figure 1b

Scatterplot

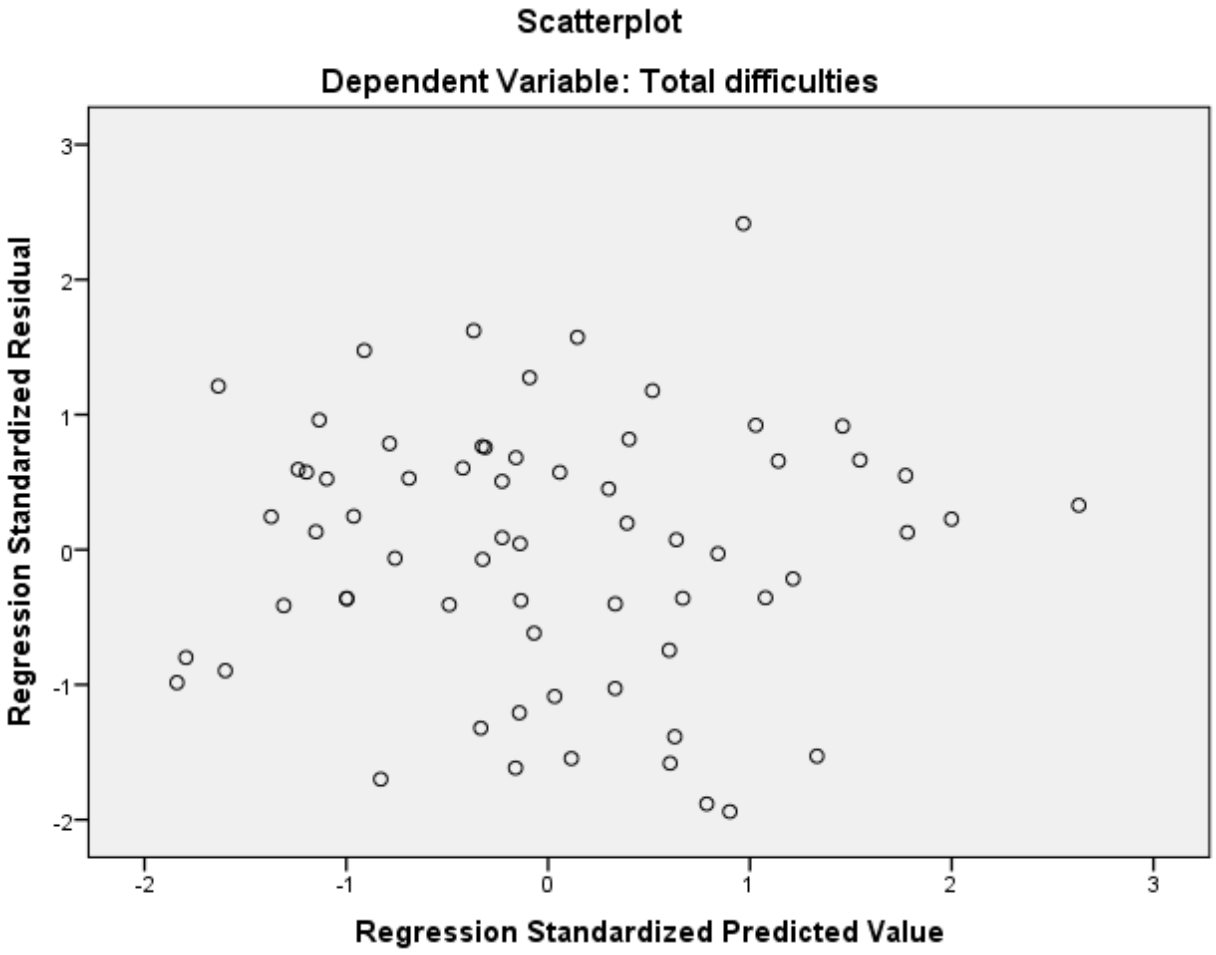


Figure 2a

Histogram of Standardized Residuals

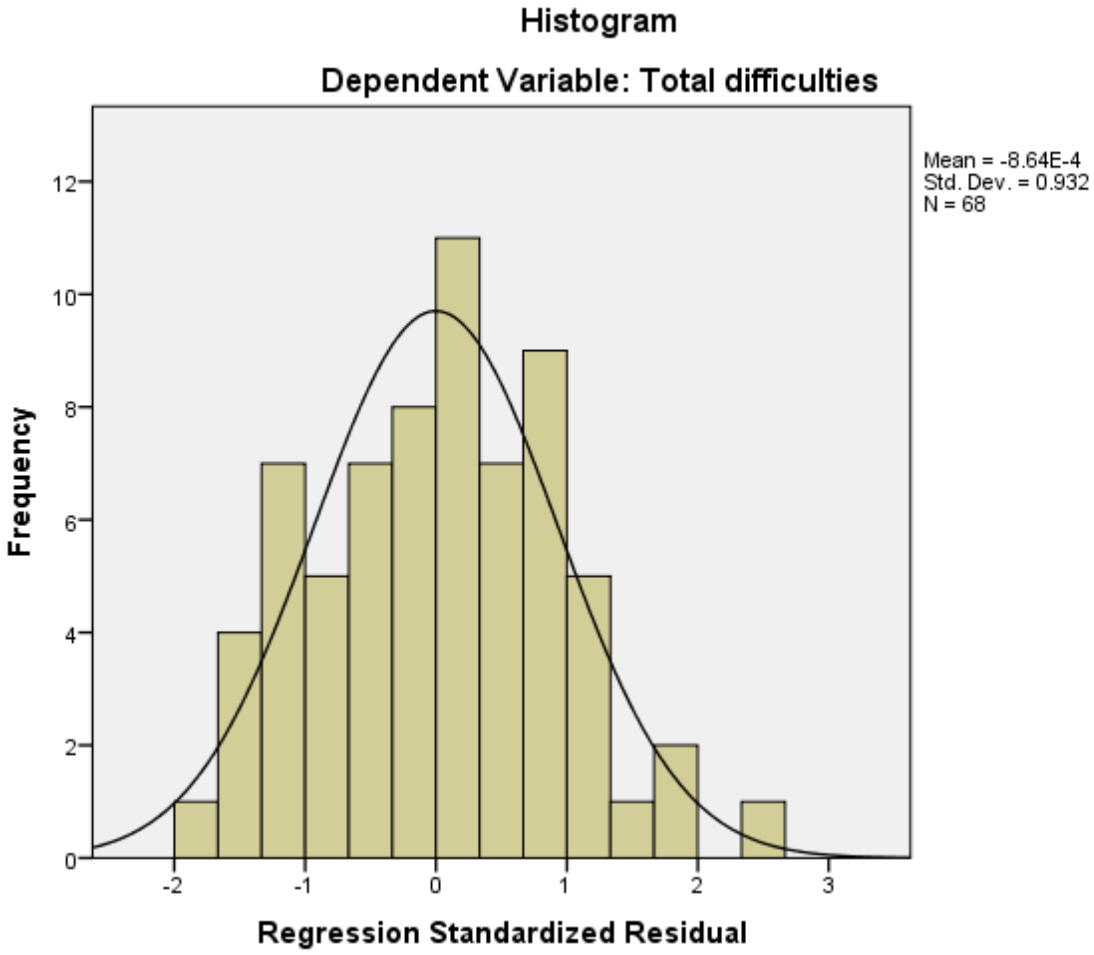
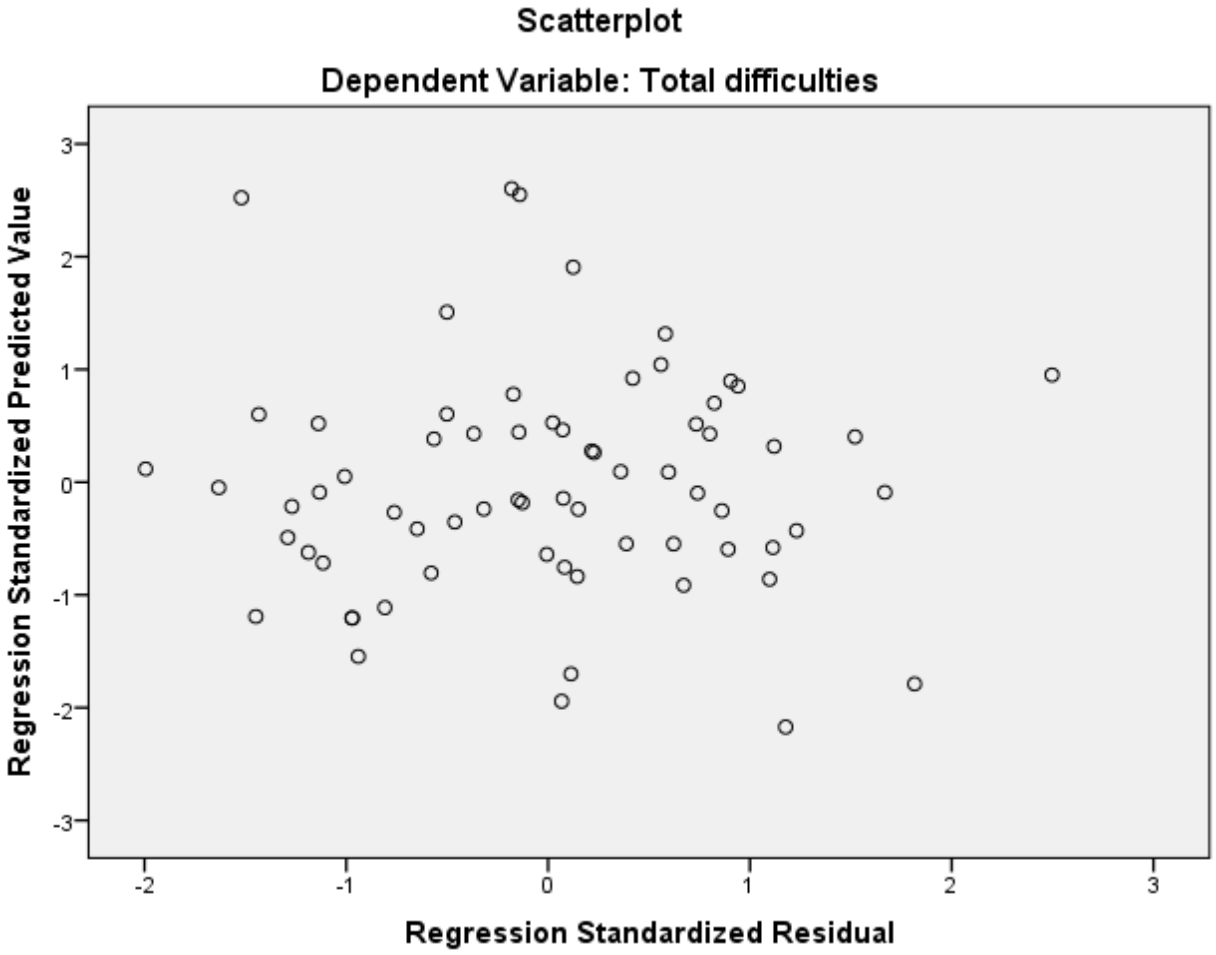


Figure 2b

Scatterplot



Appendix A
Arabic and English Versions of Informed Consent
Informed Consent for Mothers of children with ASD
CONSENT TO PARTICPATE IN A RESEARCH PROJECT

Project Title: An Examination of Maternal Perceptions of Factors Affecting Psychological Adjustment in Siblings of Children with Autism in Lebanon

Project Director:
Nidal Daou, Ph.D.
Assistant Professor of Psychology
American University of Beirut
Email: nn07@aub.edu.lb
Phone number: 01-350000
Ext: 4376/4360, Jesup 108

Research-Investigators:
Stephanie D. Srour
Graduate Student
American University of Beirut (AUB)
Email: sds06@mail.aub.edu or
Stephanie.srour06@gmail.com

Introduction/ Purpose: You are invited to participate in a research study. The study is conducted under the direction of Nidal Daou, PhD, Assistant Professor, American University of Beirut (AUB). The co-Investigator taking part in this study is a graduate student from AUB. The purpose of this research study is to examine the psychological adjustment of siblings of children with ASD and compare it to the psychological adjustment of siblings of children who are typically developing. The results of this study may help in understanding the impact of ASD on typically developing siblings and increase ASD awareness.

Recruitment and Procedures: This study is being advertised on the Facebook pages (e.g., setting up a special Facebook group for this study, connecting with autism- and psychology-related groups). In addition, posters will be hung up at the Psychiatry Department of the American University of Beirut-Medical Center-, Psychology Department at the American University of Beirut as well as other private clinics. The second recruitment procedure will involve accompanying therapists to homes of children with ASD and asking for their voluntarily participation in the study. The third type of recruitment procedure will include contacting schools. Approximately 80 mothers of children with ASD and typically developing siblings and 80 mothers of typically developing children aged between 4 and 18 years are expected to participate in this study. Each participant will respond to a questionnaire battery inquiring about perceptions and experiences in parenting a child with ASD and perceptions about the psychological adjustment of typically developing sibling. The time commitment of each participant is expected to last 45-60 minutes.

Possible Discomforts and Risks: There are no foreseeable physical or psychological risks involved with participating in this study that exceed minimal risks ordinarily encountered in daily life or during performance of routine physical or psychological evaluation, although the possibility of some unforeseeable risks exists. To minimize the risk of breach of anonymity we will not ask you to provide your name or birth date.

Potential Benefits: A potential benefit of participating in this study is that you might become aware of the possible difficulties that your typically developing child might be experiencing. By participating in this study, you may help in the development of new trainings that will help

parents develop various strategies to provide siblings of children with ASD a better family environment . Another benefit is that participating in this study may help in increasing knowledge pertaining to the psychological adjustment of siblings of children with ASD in the Lebanese context, a place where research on this topic is scarce. You will also have a chance to win one of three 50,000 LBP gift card.

Alternatives:

Participation in this study is completely voluntary and there are no alternatives to participation.

Voluntary Participation and Withdrawal from the Project: Your participation in this study is voluntary, and you may decide not to participate without prejudice, penalty, or loss of benefits to which you are otherwise entitled. In addition, you may withdraw your consent to participate in this research at any point without any explanation and without any penalty. You are also free to stop answering this survey at any point in time without any explanation.

Financial Considerations: Participation in this study will involve no cost to the participant.

Confidentiality: Participation in this research is anonymous and the results of your participation will be kept confidential to the fullest extent possible. This means that no one will know about your specific results. Your name and contact information are only requested for your participation in the draw. This information will not be linked to the questionnaires. Only information that cannot be traced to you will be used in reports or manuscripts published or presented by the investigator or director. Raw data on data-recording systems will be kept in a locked cabinet in the office of the investigator for a period of seven years following the termination or publication of the study. After the seven years have elapsed, the raw data will be deleted (data entered on computer) and shredded (paper-based data). Records might be monitored or audited by the AUB IRB, or another legal body, without violating your privacy as your data will never be associated with your personal identifying information.

Contact Questions/Persons: This project has been reviewed and approved by the AUB IRB Office for the Protection of Human Participants in Research and Research Related Activities. If you have any questions about your rights as a research participant, or to report a research-related concern/problem, you may call the IRB at: 01-350000 Ext. 5444/5.You may also contact the investigators: Stephanie Srour or Nidal Daou (contact information above).

Debriefing: If you are interested in learning about the outcome of the study, you may contact Stephanie Srour or Nidal Daou (contact information above), who, upon request, could email/explain to you a summary of the results after data analysis would have concluded.

Statement of Consent:

"I am 18 years of age or older. I have read the above description of this research and I understand it. I have been informed of the risks and benefits involved, and all my questions have been answered to my satisfaction. Furthermore, I have been assured that any future questions that I may have will also be answered by the principal investigator of the research study."

☐ By checking this box I indicate that I voluntarily agree to participate in this study. I have not waived any of my legal rights to which I would otherwise be entitled.

Informed Consent for Mothers of Typically Developing Children

CONSENT TO PARTICPATE IN A RESEARCH PROJECT

Project Title: An Examination of Maternal Perceptions of Factors Affecting Psychological Adjustment in Siblings of Children with Autism in Lebanon

Project Director:
Nidal Daou, Ph.D.
Assistant Professor of Psychology
American University of Beirut
Email: nn07@aub.edu.lb
Phone number:01-350000
Ext: 4376/4360, Jesup 108

Research-Investigator:
Stephanie D. Srour
Graduate Student
American University of Beirut
Email: sds06@mail.aub.edu or
Stephanie.srour06@gmail.com

Introduction/ Purpose: You are invited to participate in a research study. The study is conducted under the direction of Nidal Daou, PhD, Assistant Professor, American University of Beirut (AUB). The co-Investigator taking part in this study is a graduate student from AUB. The purpose of this research study is to examine mothers' perceptions of the psychological adjustment of siblings of children who are developing typically in the Lebanese context. We are interested in drawing comparisons between the adjustment of this sample of siblings and another sample – one that consists of siblings of children with autism. The results of this study may help in understanding the impact of autism on typically developing siblings.

Procedures: Approximately 160 mothers of children aged between 4 and 18 years are expected to participate in this study. Each participant will respond to a questionnaire battery inquiring about perceptions and experiences in parenting as well as your perceptions about the psychological adjustment of the sibling that is closest in age to your youngest child. The time commitment of each participant is expected to last between 45-60 minutes.

Possible Discomforts and Risks: There are no foreseeable physical or psychological risks involved with participating in this study that exceed minimal risks ordinarily encountered in daily life or during performance of routine physical or psychological evaluation, although the possibility of some unforeseeable risks exists. To minimize the risk of breach of anonymity we will not ask you to provide your name or birth date.

Potential Benefits: A potential benefit of participating in this study is that you might become aware of the possible difficulties that your child might be experiencing. By participating in this study, you may help in the development of new trainings that will help parents develop various strategies to provide siblings of children with ASD a better family environment. Another benefit is that participating in this study may help in increasing knowledge pertaining to the psychological adjustment of siblings of children with autism in the Lebanese context, a place where research on this topic is scarce. You will also have a chance to win one of three 50,000 LBP gift cards.

Alternatives: Participation in this study is completely voluntary and there are no alternatives to participation.

Voluntary Participation and Withdrawal from the Project: Your participation in this study is voluntary, and you may decide not to participate without prejudice, penalty, or loss of benefits to which you are otherwise entitled. In addition, you may withdraw your consent to participate in

this research at any point without any explanation and without any penalty. You are also free to stop answering this survey at any point in time without any explanation.

Financial Considerations: Participation in this study will involve no cost to the participant.

Confidentiality: Participation in this research is anonymous and the results of your participation will be kept confidential to the fullest extent possible. This means that no one will know about your specific results. Your name and contact information are only requested for your participation in the draw. This information will not be linked to the questionnaires. Only information that cannot be traced to you will be used in reports or manuscripts published or presented by the investigator or director. Raw data on data-recording systems will be kept in a locked cabinet in the office of the investigator for a period of seven years following the termination or publication of the study. After the seven years have elapsed, the raw data will be deleted (data entered on computer) and shredded (paper-based data). Records might be monitored or audited by the AUB IRB, or another legal body, without violating your privacy as your data will never be associated with your personal identifying information.

Contact Questions/Persons: This project has been reviewed and approved by the AUB IRB Office for the Protection of Human Participants in Research and Research Related Activities. If you have any questions about your rights as a research participant, or to report a research-related concern/problem, you may call the IRB at: 01-350000 Ext. 5444/5.You may also contact the investigators: Stephanie Srour or Nidal Daou (contact information above).

Debriefing: If you are interested in learning about the outcome of the study, you may contact Stephanie Srour or Nidal Daou (contact information above), who, upon request, could email/explain to you a summary of the results after data analysis would have concluded.

Statement of Consent:

"I am 18 years of age or older. I have read the above description of this research and I understand it. I have been informed of the risks and benefits involved, and all my questions have been answered to my satisfaction. Furthermore, I have been assured that any future questions that I may have will also be answered by the principal investigator of the research study."

☐ By checking this box I indicate that I voluntarily agree to participate in this study. I have not waived any of my legal rights to which I would otherwise be entitled.

Informed Consent for Mothers of children with ASD (Arabic Version)
الموافقة على المشاركة في دراسة بحث

عنوان البحث: فحص دراسة العوامل التي تؤثر على تكيّف الاطفال

مدير البحث

نضال ضو
أستاذة مساعدة في علم النّفس

الجامعة الاميركية في بيروت
البريد الالكتروني: nn07@aub.edu.lb
هاتف:01-350000
التّحويلة: 4360 -4376

الباحث

ستيفاني د. سرور
طالبة في برنامج الماجستير في قسم علم النفس

الجامعة الاميركية في بيروت (AUB)
البريد الالكتروني: sds06@mail.aub.edu
أو Stephanie.srour06@gmail.com

المقدّمة \ الهدف:
أنت مدعوة للمشاركة في دراسة بحثيّة أجريت تحت اشراف نضال ضو الحائزة على شهادة دكتوراه, استاذة مساعدة في الجامعة الاميركية في بيروت (AUB). تشارك في هذه الدّراسة طالبة في برنامج الماجستير في قسم علم النفس. الغاية من هذه الدّراسة البحثيّة هي اختبار تصورات الأمهات عن تكيّف نفسي لاطفالهن.
نحن مهتمون في المقارنات بين تكيف هذه العينة من ا الاخوة و عينة أخرى - واحدة تتكون من اخوة الأطفال الذين لا يعانون من التوحد. قد تساعد نتائج هذه الدّراسة في تفهّم وقع تأثير مرض التّوحد على الأخوة .

الإجراءات:
تقريبا من المتوقّع أن يشاركوا في الدّراسة حوالي 160 أمّا لأطفال عمرهم بين ال 4 و 18 سنة. ستجاوب كل مشتركة عن استفتاء يستفهم عن المفاهيم والخبرات في تربية الأطفال وكذلك عن تكيّف الأخ/الأخة الأقرب في سن للطفل الذي يعاني من التوحد. الوقة الملتزم لكل مشترك من المتوقع أن يستمر بين 45 - 60 دقيقة

المضايقات والمخاطر المحتملة:
ليس هناك أي خطر جسدي أو نفسي متوقّع جرّاء المشاركة في هذه الدّراسة يتخطّى الحدّ الأدنى من المخاطر التّي تواجهيهاعادة في الحياة اليوميّة أو خلال أداء تقييم جسدي أو نفسي روتيني. ولكن رغم ذلك هناك نسبة امكانيّة حصول مخاطر غير متوقّعة. ومن أجل الحفاظ على سرية الهوية, لن نطلب منك تقديم اسمك أو تاريخ مولدك.

الفوائد المحتملة:
الفائدة المحتملة من خلال المشاركة في هذه الدّراسة هي قد تصبحي مدركة بالتّجارب والصّعوبات التي يعيشها طفلك. من خلال المشاركة في هذه الدّراسة قد تساعدي بتطوير تدريبات جديدة قد تساعد الأهل على ايجاد استراتيجيّات متنوّعة.
فائدة أخرى من خلال المشاركة في هذه الدّراسة هي تجهيز بيئة أسريّة أفضل لأخوة الأطفال الذين يعانون من التوحد . فائدة أخرى هي زيادة المعرفة المتعلّقة بتكيّف نفسي أخوة الأطفال الذين يعانون من التوحد في المجتمع اللّبناني حيث الأبحاث حول هذا الموضوع نادرة. وهناك أيضا فرصة ربح احدى بطاقات الهدايا الثّلاث بقيمة 50,000 ليرة لبنانية . (اذا اردت المشاركة في هذا السحب, نطلب ان تدوّني اسمك وعنوانك البريدي او رقم هاتفك على ورقة غير مرتبطة بالبيانات الاخرى في هذا البحث)

البدائل:
تعتبر المشاركة في هذه الدّراسة تطوّعا كليًا وليس هناك أي بديل مقابل المشاركة.

المشاركة تطوّعا والانسحاب من المشروع:
مشاركتك في هذه الدّراسة عمل تطوّعي و يمكنك عدم المشاركة دون أي تحيّز, أو عقوبة, أو خسارة فوائد يحقّ لك بها.
بالاضافة الى ذلك, يمكنك سحب موافقتك على المشاركة في البحث في أي وقت دون أي تفسير أو عقوبة.
كما لك الحرية بالتّوقف عن الاجابة على هذا الاستفتاء في أي وقت دون أي تبرير.

الاعتبارات المالية:
لن تسجّل المشاركة في هذه الدّراسة أي كلفة مادية على المشتركة.

السريّة:

المشاركة في هذا البحث مجهولة كما ستبقى نتائج مشاركتك سرية الى أقصى حدّ. وهذا يعني أن لا أحد سيعلم بنتائجك الخاصة. اسمك ومعلومات الاتصال سيطلبان من أجل مشاركتك في السّحب ولكن لن يكونا مرتبطين بالاستفتاء. فقط المعلومات التي ليس لها أي دلالة عنك ستستخدم في التّقارير والمخطوطات المنشورة أو المقدّمة من قبل الباحث أو المدير.
ستبقى البيانات الأوليّة على أجهزة تسجيل البيانات في خزانة مقفلة في مكتب الباحث لمدّة سبع سنوات وذلك حسب انهاء ونشر الدّراسة. وبعد مرور سبع سنوات, تمحى البيانات الأوليّة (تدخل البيانات على الحاسوب) وتمزّق (البيانات الورقيّة). وقد يتم التّنصت أو التّدقيق بالتّسجيلات من قبل ال AUB IRB, أو أي هيئة قانونيّة أخرى, دون انتهاك خصوصيّتك بما أنّ بياناتك لن تكون مرتبطة بمعلومات تحديد شخصيّتك.
لحماية الأفراد
<u>للاتصال في حال وجود أسئلة:</u> لقد تمت مراجعة هذا المشروع و الموافقة عليه من قبل مكتب AUB IRB(لجنة الاخلاقيات)المشاركين في البحث و نشاطات البحث ذات الصلة.
يمكنك الاتصال بالباحثين: ستيفاني سرور أو نضال ضو (معلومات الاتصال مبينة أعلاه) .
إذا كان لديكي أسئلة عن حقوقك كمشاركة في البحث، أو للإبلاغ عن أي مشكلة / قلق متعلق بالبحث، يمكنك الإتصال بمكتب IRB على: 01-350000 تحويلة: 5444/5
<u>استخلاص المعلومات:</u>
في حال كنت مهتمة بمعرفة نتائج الدّراسة, يمكنك الاتّصال بستيفاني سرور أو نضال ضو (معلومات الاتّصال مذكورة أعلاه), اللتان ستقدّمان لك عند الطّلب مختصر عن النّتائج بعد انهاء تحليل البيانات.
<u>بيان الموافقة:</u>
"لقد بلغ عمري 18 سنة أو أكثر, وقد قرأت وصف مضمون البحث أعلاه, وأنا أفهمه. وقد تمّ ابلاغي عن المخاطر والفوائد المعنيّة, وتم الرّد على كل أسئلتي بشكل مرض. بالاضافة الى ذلك, تمّ التّأكيد لي أنها ستتم الاجابة عن أي سؤال في المستقبل من قبل الباحثة الأساسيّة لهذه الدّراسة."
☐ من خلال وضع علامة في هذا المربّع, أشير الى أنّني أوافق طوعا على المشاركة في هذه الدّراسة. وبذلك, لم أتخلّى عن أي من حقوقي القانونيّة التي يحقّ لي بها.

Informed Consent for Typically Developing Children (Arabic Version)
الموافقة على المشاركة في دراسة بحث

عنوان البحث: فحص دراسة العوامل التي تؤثر على تكيّف الاطفال

مدير البحث

نضال ضو
أستاذة مساعدة في علم النّفس

الجامعة الاميركية في بيروت
البريد الالكتروني: nn07@aub.edu.lb
هاتف:01-350000
التّحويلة: 4360 -4376

الباحث

ستيفاني د. سرور
طالبة في برنامج الماجستير في قسم علم النفس

الجامعة الاميركية في بيروت (AUB)
البريد الالكتروني: sds06@mail.aub.edu
أو Stephanie.srour06@gmail.com

المقدّمة \ الهدف:
أنت مدعوة للمشاركة في دراسة بحثيّة أجريت تحت اشراف نضال ضو الحائزة على شهادة دكتوراه, استاذة مساعدة في الجامعة الاميركية في بيروت (AUB). تشارك في هذه الدّراسة طالبة في برنامج الماجستير في قسم علم النفس. الغاية من هذه الدّراسة البحثيّة هي اختبار تصورات الأمهات عن تكيّف نفسي لاطفالهن.
نحن مهتمون في المقارنات بين تكيف هذه العينة من الأخوة و عينة أخرى - واحدة تتكون من أخوة الأطفال الذين يعانون من التوحد. قد تساعد نتائج هذه الدّراسة في تفهّم وقع تأثير مرض التّوحد على الأخوة .

الإجراءات:
تقريبا من المتوقّع أن يشاركوا في الدّراسة حوالي 160 أمّا لأطفال عمرهم بين ال 4 و 18 سنة. ستجاوب كل مشتركة عن استفتاء يستفهم عن المفاهيم والخبرات في تربية الأطفال وكذلك عن تكيّف الأخ/الأخة الأقرب في سن للطفل الذي يعاني من التوحد. الوقة الملتزم لكل مشترك من المتوقع أن يستمر بين 45 - 60 دقيقة.

المضايقات والمخاطر المحتملة:
ليس هناك أي خطر جسدي أو نفسي متوقّع جرّاء المشاركة في هذه الدّراسة يتخطّى الحدّ الأدنى من المخاطر التّي تواجهيها عادة في الحياة اليوميّة أو خلال أداء تقييم جسدي أو نفسي روتيني. ولكن رغم ذلك هناك نسبة امكانيّة حصول مخاطر غير متوقّعة. ومن أجل الحفاظ على سرية الهوية, لن نطلب منك تقديم اسمك أو تاريخ مولدك.

الفوائد المحتملة:
قد تصبحي مدركة بالتّجارب والصّعوبات التي يعيشها طفلك. من خلال المشاركة في هذه الدّراسة قد تساعدي بتطوير تدريبات جديدة قد تساعد الأهل على ايجاد استراتيجيّات متنوّعة.
فائدة أخرى من خلال المشاركة في هذه الدّراسة هي تجهيز بيئة أسريّة أفضل لأخوة الأطفال الذين يعانون من التوحد . فائدة أخرى هي زيادة المعرفة المتعلّقة بتكيّف نفسي أخوة الأطفال الذين يعانون من التوحد في المجتمع اللّبناني حيث الأبحاث حول هذا الموضوع نادرة. وهناك أيضا فرصة ربح احدى بطاقات الهدايا الثّلاث بقيمة 50,000 ليرة لبنانية . (اذا اردت المشاركة في هذا السحب, نطلب ان تدوّني اسمك وعنوانك البريدي او رقم هاتفك على ورقة غير مرتبطة بالبيانات الاخرى في هذا البحث)

البدائل:
تعتبر المشاركة في هذه الدّراسة تطوّعا كليًا وليس هناك أي بديل مقابل المشاركة.

المشاركة تطوّعا والانسحاب من المشروع:
مشاركتك في هذه الدّراسة عمل تطوّعي و يمكنك عدم المشاركة دون أي تحيّز, أو عقوبة, أو خسارة فوائد يحقّ لك بها.
بالاضافة الى ذلك, يمكنك سحب موافقتك على المشاركة في البحث في أي وقت دون أي تفسير أو عقوبة.
كما لك الحرية بالتّوقف عن الاجابة على هذا الاستفتاء في أي وقت دون أي تبرير.

الاعتبارات المالية:
لن تسجّل المشاركة في هذه الدّراسة أي كلفة مادية على المشتركة.

السريّة: المشاركة في هذا البحث مجهولة كما ستبقى نتائج مشاركتك سرية الى أقصى حدّ. وهذا يعني أن لا أحد سيعلم بنتائجك الخاصة. اسمك ومعلومات الاتصال سيطلبان من أجل مشاركتك في السّحب ولكن لن يكونا مرتبطين بالاستفتاء. فقط المعلومات التي ليس لها أي دلالة عنك ستستخدم في التّقارير والمخطوطات المنشورة أو المقدّمة من قبل الباحث أو المدير.
ستبقى البيانات الأوليّة على أجهزة تسجيل البيانات في خزانة مقفلة في مكتب الباحث لمدّة سبع سنوات وذلك حسب انهاء ونشر الدّراسة. وبعد مرور سبع سنوات, تمحى البيانات الأوليّة (تدخل البيانات على الحاسوب) وتمزّق (البيانات الورقيّة). وقد يتم التّنصت أو التّدقيق بالتّسجيلات من قبل ال AUB IRB, أو أي هيئة قانونيّة أخرى, دون انتهاك خصوصيّتك بما أنّ بياناتك لن تكون مرتبطة بمعلومات تحديد شخصيّتك.
لحماية الأفراد
للاتصال في حال وجود أسئلة: لقد تمت مراجعة هذا المشروع و الموافقة عليه من قبل مكتب AUB IRB(لجنة الاخلاقيات)المشاركين في البحث و نشاطات البحث ذات الصلة.
يمكنك الاتصال بالباحثين: ستيفاني سرور أو نضال ضو (معلومات الاتصال مبينة أعلاه) .
إذا كان لديكي أسئلة عن حقوقك كمشاركة في البحث، أو للإبلاغ عن أي مشكلة / قلق متعلق بالبحث، يمكنك الإتصال بمكتب IRB على: 01 350000 تحويلة: 5444/5
استخلاص المعلومات:
في حال كنت مهتمة بمعرفة نتائج الدّراسة, يمكنك الاتّصال بستيفاني سرور أو نضال ضو (معلومات الاتّصال مذكورة أعلاه), اللتان ستقدّمان لك عند الطّلب مختصر عن النّتائج بعد انهاء تحليل البيانات.
بيان الموافقة:
"لقد بلغ عمري 18 سنة أو أكثر, وقد قرأت وصف مضمون البحث أعلاه, وأنا أفهمه. وقد تمّ ابلاغي عن المخاطر والفوائد المعنيّة, وتم الرّد على كل أسئلتي بشكل مرض. بالاضافة الى ذلك, تمّ التّأكيد لي أنها ستتم الاجابة عن أي سؤال في المستقبل من قبل الباحثة الأساسيّة لهذه الدّراسة."
☐ من خلال وضع علامة في هذا المربّع, أشير الى أنّني أوافق طوعا على المشاركة في هذه الدّراسة. وبذلك, لم أتخلّى عن أي من حقوقي القانونيّة التي يحقّ لي بها.

Appendix B

Indian Scale for Assessment of Autism (ISAA)

Mother of Children with ASD

Below you are given 40 statements which are divided under six domains, please select the appropriate rating for each item of the scale by observing your child with autism. Please answer to the best of your ability.

Items	Rarely Up to 20% Score 1	Sometimes 21-40% Score 2	Frequently 41-60% Score 3	Mostly 61-80% Score 4	Always 81-100% Score 5
1. Has poor eye contact					
2. Lacks social smile					
3. Remains aloof					
4. Does not reach out to others					
5. Unable to relate to others					
6. Unable to respond to social/environmental cues					
7. Engages in solitary and repetitive play activities					
8. Unable to take turns in social interaction					
9. Does not maintain peer relationships					
10. Shows inappropriate emotional responses					
11. Shows exaggerated emotions					
12. Engages in self-stimulating emotions					
13. Lacks fear of danger					
14. Excited or agitated for no apparent reason					
15. Acquired speech and lost it					
16. Has difficulty in using non-verbal language or gestures to communicate					
17. Engages in stereotyped and repetitive					

use of language					
18. Engages in echolalic speech					
19. Produces infantile squeals/ unusual noises					
20. Unable to initiate or sustain conversation with others					
21. Uses jargon or meaningless words					
22. Uses pronoun reversals					
23. Unable to grasp pragmatics of communication (real meaning)					
24. Engages in stereotyped and repetitive motor mannerisms					
25. Shows attachment to inanimate objects					
26. Shows hyperactivity/restlessness					
27. Exhibits aggressive behavior					
28. Throws temper tantrums					
29. Engages in self-injurious behavior					
30. Insists on sameness					
31. Unusually sensitive to sensory stimuli					
32. Stares into space for long periods of time					
33. Has difficulty in tracking objects					
34. Has unusual vision					
35. Insensitive to pain					
36. Responds to objects/ people unusually by smelling, touching, or					

tasting					
37. Inconsistent attention and concentration					
38. Shows delay in responding					
39. Has unusual memory of some kind					
40. Has ‘savant’ ability					

Indian Scale for Assessment of Autism (Arabic version)
المقياس الهندي لتقييم التوحد

فيما يلي 40 عبارة منقسمن لستّة أبعاد. الرجاء وضع إشارة (✓) لكل عبارة في هذا المقياس من خلال مراقبتك لطفلك االذي يعاني من التوحد.
الرجاء الإجابة على الفقرات التالية على أفضل وجه.

	أبعاد المقياس وفقراته	نادرا- درجة 1	بعض الأحيان- درجة 2	كثيرا- درجة 3	غالبا- درجة 4	دائما- درجة 5
1	ضعف في التواصل البصري					
2	يفتقر "للابتسامة الاجتماعية"					
3	يبقى بمعزل عن الآخرين					
4	لا يتواصل مع الآخرين					
5	لا يتقرب من الآخرين					
6	عاجز عن الاستجابة للمثيرات الاجتماعية والبيئية					
7	ينشغل بالألعاب الفردية و التي لها طابع تكراري					
8	غير قادر على أخذ الأدوار في التفاعل الاجتماعي					
9	لا يحافظ على علاقاته مع أقرانه					
10	يظهر استجابات انفعالية غير مناسبة					
11	يظهر انفعالات مبالغ بها (كنوبات الصراخ والضحك)					
12	ينشغل بالإثارة الانفعالية الذاتية كالضحك والبكاء					
13	يظهر عدم خوف من المخاطر					
14	ينفعل أو يُثار بدون سبب واضح					
15	يفقد اللغة التي اكتسبها					
16	لديه صعوبات في استخدام اللغة غير اللفظية والإيماءات للتواصل مع الآخرين					
17	ينشغل بتعبيرات لغوية نمطية وتكرارية					
18	يصدر اصواتا متكررة لا معنى لها					
19	يصدر صرخات أطفال غير طبيعية/ ضجة غير اعتيادية					
20	عاجز عن البدء والاستمرار بمحادثة مع الآخرين					
21	يستخدم لهجة غريبة أو كلمات غير مفهومة					
22	يعكس الضمائر اللّغوية (أنا – أنت .....)					
23	غير قادر على فهم مضمون الكلام (المعنى الحقيقي)					
24	ينشغل بحركات نمطية وذات طابع تكراري					
25	يظهر تعلق بأشياء جامدة غير حية					
26	يظهر نشاطًا زائدًا وأرق					

27	يظهر سلوك عدواني					
28	يظهر نوبات غضب					
29	ينشغل بإيذاء ذاته (جسديًّا)					
30	يصرّ على الروتين ويرفض التغيير					
31	استجابة غير اعتيادية للمثيرات الحسية					
32	يحدق في المدى لفترات طويلة					
33	يجد صعوبة في تتبّع الأشياء					
34	لديه رؤية غير اعتيادية					
35	غير حسّاس للألم					
36	يستجيب للأشياء والناس بشكل غير اعتيادي من خلال استخدام الحواس كالشّمّ واللّمس والتّذوّق					
37	يظهر انتباه وتركيز متقطّعين					
38	يظهر تأخّرًا في الاستجابة					
39	لديه نوع من ذاكرة غير الإعتيادية					
40	لديه قدرات خارقة في مجال ما					

Appendix C

Sibling Inventory of Differential Experience (SIDE) – Parent Version
Mother of Children with ASD

This questionnaire is designed to ask you about two of your children (your child with ASD and the other child who is typically developing and closest in age to your child with ASD). The questionnaire is designed to ask you about what makes your children different from each other as they are growing up. We would like you to compare them to each other. For each question, think about what causes differences between them. We will ask you how you have interacted with them. For the entire questionnaire, think about your experience in the last 12 months. Select the appropriate option for each question (1, 2, 3, 4, or 5). No item will apply in every situation, but try to consider what usually has happened between your two children. Please answer quickly and honestly. There are no right or wrong answers. Example: if a question asks you if you have been stricter with the child with ASD or his/her sibling, if you have been more strict with your child with ASD, you should select "1". If you have been more strict with your other child, select "5". Select "3" if you have been equally strict with both of them. Please avoid selecting "3" or leaving the question blank whenever possible.

		Child With ASD More		Same		Child Without ASD More
1	**I expect my children to do work around the house.**	1	2	3	4	5
2	**I expect my children to keep their rooms clean.**	1	2	3	4	5
3	**I ask my children for help.**	1	2	3	4	5
4	**I have been strict with the children.**	1	2	3	4	5
5	**I have been proud of the things the children have done.**	1	2	3	4	5
6	**I have enjoyed doing things with the children.**	1	2	3	4	5
7	**I have been sensitive to what the children think and feel.**	1	2	3	4	5
8	**I have punished the children for their misbehavior.**	1	2	3	4	5
9	**I have shown interest in the things the children like to do.**	1	2	3	4	5
10	**I have blamed the children for what another family member has done.**	1	2	3	4	5
11	**I have tended to favor one of the children.**	1	2	3	4	5
12	**I have disciplined the children.**	1	2	3	4	5
13	**I spend time...**	1	2	3	4	5

Mothers of Typically Developing Children

This questionnaire is designed to ask you about two of your children (your youngest child and the other child who is closest in age to your youngest child). The questionnaire is designed to ask you about what makes your children different from each other as they are growing up. We would like you to compare them to each other. For each question, think about what causes differences between them. We will ask you how you have interacted with them. For the entire questionnaire, think about your experience in the last 12 months. Select the appropriate option for each question (1, 2, 3, 4, or 5). No item will apply in every situation, but try to consider what usually has happened between your two children. Please answer quickly and honestly. There are no right or wrong answers. Example: if a question asks you if you have been stricter with the youngest child or his/her sibling, if you have been more strict with your youngest child, you should select "1". If you have been more strict with your other child, select "5". Select "3" if you have been equally strict with both of them. Please avoid selecting "3" or leaving the question blank whenever possible.

		Youngest child More		Same		Child closest in age to the youngest child More
1	**I expect my children to do work around the house.**	1	2	3	4	5
2	**I expect my children to keep their rooms clean.**	1	2	3	4	5
3	**I ask my children for help.**	1	2	3	4	5
4	**I have been strict with the children.**	1	2	3	4	5
5	**I have been proud of the things the children have done.**	1	2	3	4	5
6	**I have enjoyed doing things with the children.**	1	2	3	4	5
7	**I have been sensitive to what the children think and feel.**	1	2	3	4	5
8	**I have punished the children for their misbehavior.**	1	2	3	4	5
9	**I have shown interest in the things the children like to do.**	1	2	3	4	5
10	**I have blamed the children for what another family member has done.**	1	2	3	4	5
11	**I have tended to favor one of the children.**	1	2	3	4	5
12	**I have disciplined the children.**	1	2	3	4	5
13	**I spend time...**	1	2	3	4	5

Mothers of Children with ASD (Arabic Version)

يهدف نموذج الاستطلاع هذا إلى التعرف على اثنين من ولديك. **طفلك الذي يعاني من التوحد** و **طفلك الأقرب سناً له/لها**. كما يهدف نموذج الاستطلاع هذا إلى سؤالك عما يميز كل من ولديك عن بعضها البعض خلال نموهما. لذلك نرجو منك أن تقارني بينهما. لكل سؤال، نريد منك أن تفكري عما يسبب الفرق بينهما. سوف نسألك كيف تتفاعلين معهما. فكري في تجاربك خلال الإثنا عشر شهرا الاخيرين حينما تجاوبي على الأسئلة. اختاري الخيار المناسب لكل سؤال (1-2-3-4 أو 5).
لا يمكن لاي بند أن ينطبق في كل موقف، ولكن حاولي الأخذ بالاعتبار كل ما يحصل بين طفليك. يرجى الإجابة بسرعة ، فليس هناك جواب صحيح أو خاطئ. مثل: إذا تم سؤالك مع من أنت صارمة أكثر، مع طفلك الذي يعاني من التوحد أو مع طفلك الأقرب في السن ، أختاري الرقم "1" إن كنت صارمة أكثر مع الطفل الذي يعاني من التوحد أو الرقم "5" إن كنت صارمة أكثر مع الطفل الأقرب في سن. واذا كنت صارمة بالتساوي مع الولدين اختاري الرقم "3". ولكن نرجوا منك ان تتجنبي اختيار الرقم "3" وايضاً ان تتجنبي ترك مكان الجواب فارغا" إن أمكن

		الطفل الذي يعاني من اكثر التوحد				**الطفل الأقرب في سن اكثر**
1	أتوقّع من أطفالي أن يشاركوا ببعض الأعمال في المنزل.	1	2	3	4	5
2	أتوقّع من أولادي أن يحافظوا على نظافة غرفهم	1	2	3	4	5
3	أطلب من أولادي المساعدة.	1	2	3	4	5
4	كنت صارمة مع أولادي.	1	2	3	4	5
5	أنا فخورة بالأعمال التي قاموا بها أولادي .	1	2	3	4	5
6	استمتعت بالقيام بنشاطات مع أولادي	1	2	3	4	5
7	كنت حسّاسة تجاه ما يفكر أو يشعر به أولادي.	1	2	3	4	5
8	قمت بمعاقبة أولادي على سوء سلوكهم.	1	2	3	4	5
9	أظهرت اهتماماً بالأشياء التي يرغب أولادي القيام بها.	1	2	3	4	5
10	لمت أولادي على ما ارتكبه شخص آخر من العائلة.	1	2	3	4	5
11	أميل إلى تفضيل ولد عن آخر من أولادي	1	2	3	4	5
12	لقد قمت بتأديب أولادي.	1	2	3	4	5
13	أمضي وقتي مع اولادي	1	2	3	4	5

Mothers of Typically Developing Children (Arabic Version)

يهدف نموذج الاستطلاع هذا إلى التعرف على اثنين من ولديك. **طفلك الاصغر سناً** و **طفلك ما قبل الأخير**. كما يهدف نموذج الاستطلاع هذا إلى سؤالك عما يميز كل من ولديك عن بعضها البعض خلال نموهما . لذلك نرجو منك أن تقارني بينهما. لكل سؤال، نريد منك أن تفكري عما يسبب الفرق بينهما. سوف نسألك كيف تتفاعلين معهما. فكري في تجاربك خلال الإثنا عشر شهرا الاخيرين حينما تجاوبي على الأسئلة. اختاري الخيار المناسب لكل سؤال (1-2-3-4 أو 5).
لا يمكن لاي بند أن ينطبق في كل موقف، ولكن حاولي الأخذ بالاعتبار كل ما يحصل بين طفليك. يرجى الإجابة بسرعة ، فليس هناك جواب صحيح أو خاطئ.
مثل: إذا تم سؤالك مع من أنت صارمة أكثر، مع طفلك الاصغر أو طفلك ما قبل الأخير ، أختاري الرقم "1" إن كنت صارمة أكثر مع الطفل الاصغر سناً أو الرقم "5" إن كنت صارمة أكثر مع طفلك ما قبل الأخير. واذا كنت صارمة بالتساوي مع الولدين اختاري الرقم "3". ولكن نرجوا منك ان تتجنبي اختيار الرقم "3" وايضاً ان تتجنبي ترك مكان الجواب فارغا" إن أمكن.

		الطفل الاصغر سناً اكثر				**الطفل ما قبل الأخير اكثر**
1	أتوقّع من أطفالي أن يشاركوا ببعض الأعمال في المنزل.	1	2	3	4	5
2	أتوقّع من أولادي أن يحافظوا على نظافة غرفهم	1	2	3	4	5
3	أطلب من أولادي المساعدة.	1	2	3	4	5
4	كنت صارمة مع أولادي.	1	2	3	4	5
5	أنا فخورة بالأعمال التي قاموا بها أولادي .	1	2	3	4	5
6	استمتعت بالقيام بنشاطات مع أولادي	1	2	3	4	5
7	كنت حسّاسة تجاه ما يفكر أو يشعر به أولادي.	1	2	3	4	5
8	قمت بمعاقبة أولادي على سوء سلوكهم.	1	2	3	4	5
9	أظهرت اهتماماً بالأشياء التي يرغب أولادي القيام بها.	1	2	3	4	5
10	لمت أولادي على ما ارتكبه شخص آخر من العائلة.	1	2	3	4	5
11	أميل إلى تفضيل ولد عن آخر من أولادي	1	2	3	4	5
12	لقد قمت بتأديب أولادي.	1	2	3	4	5
13	أمضي وقتي مع اولادي	1	2	3	4	5

Appendix D

Parenting Sense of Competence

Instructions: Listed below are a number of statements. Please respond to each item, indicating your agreement or disagreement with each statement.

		Strongly agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
1	The problems of taking care of a child are easy to solve once you know how your actions affect your child, an understanding I have acquired.	1	2	3	4	5	6
2	Even though being a (parent) could be rewarding, I am frustrated now while my child is at his/her present age.	1	2	3	4	5	6
3	I go to bed the same way I wake up in the morning—feeling I have not accomplished a whole lot.	1	2	3	4	5	6
4	I do not know what it is, but sometimes when I'm supposed to be in control, I feel more like the one being manipulated.	1	2	3	4	5	6
5	My (parent) was better prepared to be a good (parent) than I am.	1	2	3	4	5	6
6	I would make a fine model for a new (parent) to follow in order to learn what she/he would need to know in order to be a good (parent).	1	2	3	4	5	6
7	Being a (parent) is manageable, and any problems are easily solved.	1	2	3	4	5	6
8	A difficult problem in being a (parent) is not knowing whether you're doing a good job or a bad one.	1	2	3	4	5	6
9	Sometimes I feel like I'm not getting anything done about my well-being.	1	2	3	4	5	6
10	I meet my own personal expectations for expertise in caring for my child.	1	2	3	4	5	6
11	If anyone can find the answer to what is troubling my child, I am the one	1	2	3	4	5	6
12	My talents and interests are in	1	2	3	4	5	6

	other areas, not in being a (parent).						
13	Considering how long I've been a (parent), I feel thoroughly familiar with this role.	1	2	3	4	5	6
14	If being a (parent) of a child were only more interesting, I would be motivated to do a better job as a (parent).	1	2	3	4	5	6
15	I honestly believe I have all the skills necessary to be a good (parent) to my child.	1	2	3	4	5	6
16	Being a (parent) makes me tense and anxious.	1	2	3	4	5	6

تجدي أدناه عدد من البيانات. يرجى الردّ على كل بند من البنود، والإشارة إلى موافقتكم أو معارضتكم لكل بيان

		أوافق بقوة	أوافق	أوافق بدرجة معتدلة	أعارض بدرجة معتدلة	أعارض	أعارض بقوة
1	إنّ مشاكل الاعتناء بأولادي يسهل حلّها إذا أدركت كيف تؤثر أفعالي على أولادي، وهذا مفهوم قد اكتسبته.	1	2	3	4	5	6
2	بالرغم من أن الشعور بالامومة قد يكون مكافىء، إلا أنني أعاني من الإحباط وأولادي في سنّهم الحالي.	1	2	3	4	5	6
3	ما أشعر به عندما أخلد للنوم هو نفس الشعور عندما استيقظ صباحا" - كأنني لم أحقق الكثير	1	2	3	4	5	6
4	لا اعرف ما الأمر بالتحديد،ولكن احيانا" حين يكون من المفترض أن أكون المسيطرة، أشعر وكأنني أنا من يتم التلاعب بها	1	2	3	4	5	6
5	كانت أمّي مهيئة أكثر لتكون أمًا أفضل مني.	1	2	3	4	5	6
6	أود أن أكون مثالا" جيدا" لأمرأة أخرى قد اصبحت والدة للمرة الاولى, كي تتعلم ما تحتاج لتكون امّاَ صالحة	1	2	3	4	5	6
7	أن أكون أمًا هو أمرٌ يسهل إدارته وأي مشاكل بإمكاني حلها ببساطة.	1	2	3	4	5	6
8	من أصعب الأمور عندما تكونين أما" هي عدم معرفتك إن كنت تقومين بعمل جيد أو سيىء.	1	2	3	4	5	6

		أوافق بقوة	أوافق	أوافق بدرجة معتدلة	أعارض بدرجة معتدلة	أعارض	أعارض بقوة
9	أشعر أحيانًا بأنني لا أحقق شيئًا في ما يتعلق برفاهيتي وصالحي الخاص	1	2	3	4	5	6
10	أقوم بتحقيق توقعاتي الخاصة في ما يتعلق بالخبرة الضرورية لرعاية أولادي.	1	2	3	4	5	6
11	لا احد يمكنه ان يدرك ما يقلق أولادي أكثر مني	1	2	3	4	5	6
12	تتركز مواهبي واهتماماتي في مجالات أخرى، غير كوني أما".	1	2	3	4	5	6
13	نظراً إلى المدة التي اصبحت فيها أمّا"، أشعر أنني على دراية وتآلف مع هذا الدور.	1	2	3	4	5	6
14	لو كان دور الأم أكثر ممتعاً ، لكنت متحمسة ومندفعة للقيام بعمل أفضل كأم.	1	2	3	4	5	6
15	أنا مقتنعة تماما" أنني أتمتّع بكافة المهارات الضرورية لأكون أمًا جيدة لأولادي.	1	2	3	4	5	6
16	دور الامومة يشعرني بالتوتر والقلق.	1	2	3	4	5	6

Appendix E

Strengths and Difficulties Questionnaire
Mothers of Children with ASD

For each item, please select the best answer, whether Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft. Please give your answers on the basis of the behavior of sibling closest in age to the child with ASD over the last six months or this school year

		Not True	Somewhat True	Certainly True
1	Considerate of other people's feelings	1	2	3
2	Restless, overactive, cannot stay still for long	1	2	3
3	Often complains of headaches, stomach-aches or sickness	1	2	3
4	Shares readily with other youth, for example books, games, food	1	2	3
5	Often loses temper	1	2	3
6	Would rather be alone than with other youth	1	2	3
7	Generally well behaved, usually does what adults request	1	2	3
8	Many worries or often seems worried	1	2	3
9	Helpful if someone is hurt, upset or feeling ill	1	2	3
10	Constantly fidgeting or squirming	1	2	3
11	Has at least one good friend	1	2	3
12	Often fights with other youth or bullies them	1	2	3

13	Often unhappy, depressed or Tearful	1	2	3

		Not True	Somewhat True	Certainly True
14	Generally liked by other youth	1	2	3
15	Easily distracted, concentration wanders	1	2	3
16	Nervous in new situations, easily loses confidence	1	2	3
17	Kind to younger children	1	2	3
18	Often lies or cheats	1	2	3
19	Picked on or bullied by other youth	1	2	3
20	Often offers to help others (parents, teachers, children)	1	2	3
21	Thinks things out before acting	1	2	3
22	Steals from home, school or elsewhere	1	2	3
23	Gets along better with adults than with other youth	1	2	3
24	Many fears, easily scared	1	2	3
25	Good attention span, sees work through to the end	1	2	3

Mothers of Typically Developing Children

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain. Please give your answers on the basis of the behavior of the child closest in age to your youngest child over the last six months or this school year.

		Not True	Somewhat True	Certainly True
1	Considerate of other people's feelings	1	2	3
2	Restless, overactive, cannot stay still for long	1	2	3
3	Often complains of headaches, stomach-aches or sickness	1	2	3
4	Shares readily with other youth, for example books, games, food	1	2	3
5	Often loses temper	1	2	3
6	Would rather be alone than with other youth	1	2	3
7	Generally well behaved, usually does what adults request	1	2	3
8	Many worries or often seems worried	1	2	3
9	Helpful if someone is hurt, upset or feeling ill	1	2	3
10	Constantly fidgeting or squirming	1	2	3
11	Has at least one good friend	1	2	3
12	Often fights with other youth or bullies them	1	2	3
13	Often unhappy, depressed or Tearful	1	2	3
14	Generally liked by other youth	1	2	3
15	Easily distracted, concentration wanders	1	2	3
16	Nervous in new situations, easily loses confidence	1	2	3
17	Kind to younger children	1	2	3
18	Often lies or cheats	1	2	3
19	Picked on or bullied by other youth	1	2	3
20	Often offers to help others (parents, teachers, children)	1	2	3
21	Thinks things out before acting	1	2	3
22	Steals from home, school or elsewhere	1	2	3
23	Gets along better with adults than with other youth	1	2	3

24	Many fears, easily scared	1	2	3
25	Good attention span, sees work through to the end	1	2	3

Mothers of Children with ASD (Arabic Version)

يرجى الاجابة على كل بند : غير صحيح ,صحيح نوعا ما , او صحيح بالتأكيد بوضع علامه تحت الأجابة المناسبة . حاولي ان تكوني دقيقة في إجاباتك .سوف يساعدنا كثيرا اذا اجبت على كل بند حتى وان كنت غير متأكد ة او تري انه غير مطابق بالتحديد يرجى ان تكون اجابتك حول طفلك الذي يعاني من التوحد خلال الستة الأشهر الأخيرة.

		بالتأكيد صحيح	صحيح نوعا ما	غير صحيح
1	يهتم بمشاعر الاخرين	1	2	3
2	لا يستطيع البقاء او الاستقرار فى مكان واحد . كثير الحركة	1	2	3
3	كثيرا ما يشكو من صداع او آلام فى البطن او الشعور بالغثيان	1	2	3
4	يشارك الاخرين بسهولة فيما يخصه (كتب, حلويات .....الخ)	1	2	3
5	كثيرا ما تنتابه نوبات من الغضب الشديد أ و سريع الغضب	1	2	3
6	يحب العزلة. يميل الى اللعب لوحده	1	2	3
7	إجمالاً حسن السلوك. عادة يفعل ما يطلبه منه الكبار	1	2	3
8	يقلق من اشياء كثيرة. كثيرا ما يبدو عليه القلق	2	3	3
9	يساعد الاخرين اذا ما حدث لأحدهم مكروه	1	2	3
10	يتشنج باستمرار جسمه في حركة مستمرة اثناء جلوسه	1	2	3
11	لديه على الاقل صديق واحد جيد	1	2	3

		بالتأكيد صحيح	صحيح نوعا ما	غير صحيح
12	كثيرا ما يتعارك مع الاخرين من نفس سنه او يتسلط عليهم	1	2	3
13	كثيرا ما يكون غير سعيد, حزين او يبكى بسهوله	1	2	3
14	فى الغالب محبوب ممن هم فى سنه	1	2	3
15	يتشتت انتباهه بسرعه وقليل التركيز	1	2	3
16	يتوتر في المواقف الجديدة. من السهل ان يفقد ثقته بنفسه	1	2	3
17	لطيف مع من هم أصغر منه	1	2	3
18	كثيرا ما يكذب , يخدع او يغش	1	2	3
19	يستهزأ او يتسلط عليه من هم فى سنه	1	2	3
20	كثيراً ما يتطوع لمساعدة الاخرين الوالدين, المدرسين,الاطفال الاخرين	1	2	3
21	يفكر قبل ان يتصرف	1	2	3
22	اخرى يسرق من البيت او المدرسة او من أماكن	1	2	3
23	ينسجم بشكل أفضل مع الكبار وليس مع الاطفال من عمره	1	2	3
24	يخاف من اشياء كثيره . من السهل تخويفه	1	2	3
25	يتابع اداء الواجبات حتى النهايه. لديه قدرة جيدة على التركيز	1	2	3

Mothers of Typically Developing Children (Arabic Version)

يرجى الاجابة على كل بند : غير صحيح ,صحيح نوعا ما , او صحيح بالتأكيد بوضع علامه تحت الأجابة المناسبة .حاولي ان تكوني دقيقة فى إجاباتك .سوف يساعدنا كثيرا اذا اجبت على كل بند حتى وان كنت غير متأكدة او تري انه غير مطابق بالتحديد . يرجى ان تكون اجابتك حول سلوك الطفل الأقرب في سن لطفلك الأصغرخلال الستة الأشهر الأخيرة.

		بالتأكيد صحيح	صحيح نوعا ما	غير صحيح
1	يهتم بمشاعر الاخرين	1	2	3
2	لا يستطيع البقاء او الاستقرار فى مكان واحد . كثير الحركة	1	2	3
3	كثيرا ما يشكو من صداع او آلام فى البطن او الشعور بالغثيان	1	2	3
4	يشارك الاخرين بسهولة فيما يخصه (كتب, حلويات .....الخ)	1	2	3
5	كثيرا ما تنتابه نوبات من الغضب الشديد أ و سريع الغضب	1	2	3
6	يحب العزلة. يميل الى اللعب لوحده	1	2	3
7	إجمالاً حسن السلوك. عادة يفعل ما يطلبه منه الكبار	1	2	3
8	يقلق من اشياء كثيرة. كثيرا ما يبدو عليه القلق	1	2	3
9	يساعد الاخرين اذا ما حدث لأحدهم مكروه	1	2	3
10	يتشنج باستمرار جسمه في حركة مستمرة اثناء جلوسه	1	2	3
11	لديه على الاقل صديق واحد جيد	1	2	3

12	كثيرا ما يتعارك مع الاخرين من نفس سنه او يتسلط عليهم	**1**	**2**	**3**
13	كثيرا ما يكون غير سعيد, حزين او يبكى بسهوله	**1**	**2**	**3**
14	فى الغالب محبوب ممن هم فى سنه	**1**	**2**	**3**
15	يتشتت انتباهه بسرعه وقليل التركيز	**1**	**2**	**3**
16	يتوتر في المواقف الجديدة. من السهل ان يفقد ثقته بنفسه	**1**	**2**	**3**
17	لطيف مع من هم أصغر منه	**1**	**2**	**3**
18	كثيرا ما يكذب , يخدع او يغش	**1**	**2**	**3**
19	يستهزأ او يتسلط عليه من هم فى سنه	**1**	**2**	**3**
20	الوالدين, كثيراً ما يتطوع لمساعدة الاخرين المدرسين,الاطفال الاخرين	**1**	**2**	**3**
21	يفكر قبل ان يتصرف	**1**	**2**	**3**
22	يسرق من البيت او المدرسة او من أماكن اخرى	**1**	**2**	**3**
23	ينسجم بشكل أفضل مع الكبار وليس مع الاطفال من عمره	**1**	**2**	**3**
24	يخاف من اشياء كثيره . من السهل تخويفه	**1**	**2**	**3**
25	يتابع اداء الواجبات حتى النهايه . لديه قدرة جيدة على التركيز	**1**	**2**	**3**

Appendix F

Demographics form

Mothers of Children with ASD

Please answer the following questions:

1. Your age (in years): _____

2. a. Number of individual members present in your family: _____

   b. How many children do you have? _____

3. a. How old is your child with autism (age in years): _____

   b. Gender of your child with autism: □ Male □ Female

   c. Do any of your **other** children have:

   1. A developmental disorder (e.g., down syndrome, autism)?
      □ Yes □ No
   2. A learning disability (e.g., dyslexia)? □ Yes □ No
   3. A physical disability? □ Yes □ No

4. a. How old is your child who is **closest in age** to your child with autism? (age in years): _____.

   b. What is the gender of your child who is **closest in age** to your child with autism?
   □ Male □ Female

5. Your marital status:
   □ Married
   □ Divorced
   □ Separated
   Widowed

6. Your educational level:
   □ Brevet
   □ Baccalaureate
   □ Bachelor's Degree
   □ Other,
   specify:_____
   □ Master's Degree
   □ Doctoral Degree (PhD or MD)

7. Your employment status:

□ Employed part-time
□Employed full-time
□ Unemployed

8. Your household income:
□ Less than 500,000 LBP/ month
□ 500,000 – 750,000 LBP/month
□ 750,000 – 1,500,000 LBP/month
□ 1,500,000 – 3,000,000 LBP/month
□ 3,000,000 – 7,500,000 LBP/month
□ More than 7,500,000 LBP/month
□ Prefer not to say

9. To what extent are you involved in the education of your child with autism?
1 - I am not at all involved in the education of my child with autism.
2- I am rarely involved in the education of my child with autism.
3 - I am somewhat involved in the education of my child with autism.
4 - I am almost always involved in the education of my child with autism.

10. To what extent are you involved in the therapy/intervention of your child with autism?
1 - I am not at all involved in the therapy/intervention of my child with autism.
2 -I am rarely involved in the therapy/intervention of my child with autism.
3 - I am somewhat involved in the therapy/intervention of my child with autism.
4 - I am almost always involved in the therapy/intervention of my child with autism.

11. In a typical week, I spend _____ of my child's free time (i.e. when he or she is not at school) with him or her.
☐ Up to 20% (small portion of time)
☐ 21-40% (a moderate amount of time)
☐ 41-60% (a great deal of time)
☐ 61-80% (most of the time)
☐ 81-100% (almost all the time)

Demographics form
Mothers of Typically Developing Children

Please answer the following questions to the best of your ability:

1. Your age (in years): _____

2. a. Number of individual members present in your family: _____

   b. How many children do you have? _____

3. a. How old is your youngest child (age in years): _____

   b. Gender of your youngest child: □ Male □ Female

   c. Do any of your **other** children have:

   i. A developmental disorder (e.g., down syndrome, autism)? …….. □ Yes □ No

   ii. A learning disability (e.g., dyslexia)? …… □ Yes □ No

   iii. A physical disability? ……. □ Yes □ No

4. a. How old is your child who is **closest in age** to your youngest child? (age in years): _____.

   b. What is the gender of your child who is **closest in age** to your youngest child?
   □ Male □ Female

5. Your marital status:
   □ Married
   □ Divorced
   □ Separated
   □ Widowed

6. Your educational level:
   □ Brevet
   □ Baccalaureate
   □ Bachelor's Degree
   □ Master's Degree
   □ Doctoral Degree (PhD or MD)
   □ Other, specify:_____

7. Your employment status:
   □ Employed full-time
   □ Employed part-time
   □ Unemployed

8. Your household income:
   - □ Less than 500,000 LBP/ month
   - □ 500,000 – 750,000 LBP/month
   - □ 750,000 – 1,500,000 LBP/month
   - □ 1,500,000 – 3,000,000 LBP/month
   - □ 3,000,000 – 7,500,000 LBP/month
   - □ More than 7,500,000 LBP/month
   - □ Prefer not to say

9. To what extent are you involved in the education of your youngest child?
   - □ I am not at all involved in the education of my child with autism.
   - □ I am rarely involved in the education of my child with autism.
   - □ I am somewhat involved in the education of my child with autism.
   - □ I am almost always involved in the education of my child with autism.

10. To what extent are you involved in the therapy/intervention of your youngest child?
   - 1- I am not at all involved in the therapy/intervention of my child with autism.
   - 2- I am rarely involved in the therapy/intervention of my child with autism.
   - 3- I am somewhat involved in the therapy/intervention of my child with autism.
   - 4- I am almost always involved in the therapy/intervention of my child with autism.

11. In a typical week, I spend _____ of my child's free time (i.e. when he or she is not at school) with him or her.
   - ☐ Up to 20% (small portion of time)
   - ☐ 21-40% (a moderate amount of time)
   - ☐ 41-60% (a great deal of time)
   - ☐ 61-80% (most of the time)
   - ☐ 81-100% (almost all the time)

Mothers of Children with ASD (Arabic Version)

الرجاء الإجابة على الأسئلة التالية:

1. عمرك: _____

2. أ. عدد أعضاء الأسرة : _____

ب. عدد الأطفال : _____

3 أ. عمر الطفل االذي يعاني من التوحد ؟ _____

ب . جنس الطفل: □ ذكر □ أنثى

ج. هل يعاني أي من أطفالك الآخرين من:

i. اضطراب النمو (مثل: متلازمة داون(Down Syndrome)، التوحد، e.tc)؟ □ نعم □ لا

ii. صعوبات التعلم (على سبيل المثال: عسر القراءة)؟ □ نعم □ لا

iii. الإعاقة الجسدية؟ □ نعم □ لا

4. أ. كم عمر طفلك **الأقرب في السن** لطفلك الذي يعاني من التوحد ؟ _____

ب. ما هو جنس طفلك **الأقرب في السن** لطفلك الذي يعاني من التوحد ؟ □ ذكر □ أنثى

5. ما هو وضعك العائلي:
□ متزوجة □ منفصلة
□ مطلقة □ أرملة

6. ما هو المستوى العلمي الذي وصلت اليه :
□ شهادة البريفيه □ درجة الدكتوراه (دكتوراه أو MD)
□ البكالوريا □ آخر
□ درجة البكالوريوس حددي : _____
□ درجة الماجستير

7. هل انت:
□ موظفة بدوام كامل
□ موظفة بدوام جزئي
□ غير موظفة

8. دخل الأسرة:
□ أقل من 500,000 ل.ل شهريا □ 3,000,000 ل.ل. – 7,500,000 ل.ل شهريا
□ 500,000 ل.ل – 750,000 ل.ل شهريا □ أكثر من 7,500,000 ل.ل شهريا
□ 1,500,000 ل.ل. – 3,000,000 ل.ل شهريا

9. إلى أي حد تشاركي في تعليم طفلك الذي يعاني من التوحد ؟
□ لم اشارك على الإطلاق في تعليم طفلي الذي يعاني من التوحد
□ أشارك نادراً في تعليم طفلي الذي يعاني من التوحد
□ أشارك إلى حدٍ ما في تعليم طفلي الذي يعاني من التوحد

□ تقريبا أشارك دائماً في تعليم طفلي الذي يعاني من التوحد

10. إلى أي حد تشاركي بمعالجة/بالتّدخل طفلك الذي يعاني من التوحد ؟
□ لم اشارك على الإطلاق بمعالجة/بالتّدخل طفلي الذي يعاني من التوحد
□ أشارك نادراً بمعالجة/بالتّدخل طفلي الذي يعاني من التوحد
□ أشارك إلى حدٍ ما بمعالجة/بالتّدخل طفلي الذي يعاني من التوحد
□ تقريبا أشارك دائماً بمعالجة/بالتّدخل طفلي الذي يعاني من التوحد

11 . في الاسبوع أقضي _____ من وقت الفراغ مع طفلي (أي عندما كان هو أو هي لسنا في المدرسة)
□ ما يصل الى 20٪ (نادراً)
□ 21-40٪ (في بعض الأحيان)
□ 41-60٪ (قدراً كبيراً من الوقت)
□ 61-80٪ (في الغالب)
□ 81-100٪(كل الوقت)

Mothers of Typically Developing Children (Arabic Version)

الرجاء الإجابة على الأسئلة التالية:

1. عمرك: _____

2. أ. عدد أعضاء الأسرة : _____

ب. عدد الأطفال : _____

3 أ. عمر طفلك الاصغر ؟ _____

ب . جنس الطفل: □ ذكر □ أنثى

ج. هل يعاني أي من أطفالك من:

i. اضطراب النمو (مثل: متلازمة داون(Down Syndrome)، التوحد، e.tc)؟ □ نعم □ لا

ii. صعوبات التعلم (على سبيل المثال: عسر القراءة)؟ □ نعم □ لا

iii. الإعاقة الجسدية؟ □ نعم □ لا

4. أ. كم عمر طفلك **الأقرب في السن** لطفلك الاصغر ؟ _____

ب. ما هو جنس طفلك **الأقرب في السن** لطفلك الاصغر ؟ □ ذكر □ أنثى

5. ما هو وضعك العائلي:
□ متزوجة □ منفصلة
□ مطلقة □ أرملة

6. ما هو المستوى العلمي الذي وصلت اليه :
□ شهادة البريفيه □ درجة الدكتوراه (دكتوراه أو MD)
□ البكالوريا □ آخر
□ درجة البكالوريوس حددي: _____
□ درجة الماجستير

7. هل انت:
□ موظفة بدوام كامل
□ موظفة بدوام جزئي
□ غير موظفة

8. دخل الأسرة:
□ أقل من 500,000ل.ل شهريا □ 3,000,000 ل.ل. – 7,500,000 ل.ل شهريا
□ 500,000ل.ل – 750,000 ل.ل شهريا □ أكثر من 7,500,000 ل.ل شهريا
□ 750,000 ل.ل – 1,500,000 ل.ل شهريا □ افضل ان لا اقول
□ 1,500,000 ل.ل. – 3,000,000 ل.ل شهريا

9. إلى أي حد تشاركي في تعليم طفلك الاصغر ؟
□ لم اشارك على الإطلاق في تعليم طفلي الاصغر
□ أشارك نادراً في تعليم طفلي الاصغر
□ أشارك إلى حدٍ ما في تعليم طفلي الاصغر
□ تقريبا أشارك دائماً في تعليم طفلي الاصغر

10. إلى أي حد تشاركي بمعالجة/بالتّدخل طفلك الاصغر ؟

□ لم اشارك على الإطلاق بمعالجة/بالتّدخل طفلي الاصغر
□ أشارك نادراً بمعالجة/بالتّدخل طفلي الاصغر
□ أشارك إلى حدٍ ما بمعالجة/بالتّدخل طفلي الاصغر
□ تقريبا أشارك دائماً بمعالجة/بالتّدخل طفلي الاصغر

11 . في الاسبوع أقضي _____ من وقت الفراغ مع طفلي (أي عندما يكون طفلي ليس في المدرسة)
□ ما يصل الى 20٪ (نادرا)
□ 21-40٪ (في بعض الأحيان)
□ 41-60٪ (قدرا كبيرا من الوقت)
□ 61-80٪ (في الغالب)
□ 81-100٪ (كل الوقت)

Appendix G

Arabic and English Flyers

هل أنت أم لطفل يعاني من التوحد ؟

هل ترغب في أن تكون جزء من مشروع بحثي ؟

- أنت مدعو للمشاركة في دراسة بحثيّة التي ستدرس التكيف النفسي لأقارب الأطفال الذين يعانون من التوحد . نتائج هذه الدراسة قد تساعد في تطوير دورات تدريبية فعالة تساعد الأهل على ايجاد استراتيجيّات متنوّعة من أجل تجهيز بيئة أسريّة أفضل لأقارب الأطفال يعانون من التوحد. سوف يطلب منك الإجابة على المسح الذي يتجاوزبين 45 - 60 دقيقة للملأ.

- **المخاطر:** ليس هناك أي خطر جسدي أو نفسي متوقّع جرّاء المشاركة في هذه الدّراسة يتخطّى الحدّ الأدنى من المخاطر التّي تواجهها عادة في الحياة اليوميّة أو خلال أداء تقييم جسدي أو نفسي روتيني. ولكن رغم ذلك هناك نسبة امكانيّة لحصول مخاطر غير متوقّعة.

- **الفوائد المحتملة:** الفائدة المحتملة من خلال المشاركة في هذه الدّراسة هي يمكنك تطوير فهم جديد حول أثر الأطفال الذين يعانون من التوحد على أشقائهم. بالإضافة إلى ذلك ، سوف تساعد في زيادة المعرفة المتعلّقة بتكيّف نفسي أقارب الأطفال الذين يعانون من التوحد في المجتمع اللّبناني. وهناك أيضا فرصة ربح احدى بطاقات الهدايا الثّلاث بقيمة 50,000 ليرة لبنانية الواحدة.

- **البدائل:** مشاركتك في هذه الدّراسة عمل تطوّعي تماما و يمكنك عدم المشاركة دون أي تحيّز, أو عقوبة, أو خسارة فوائد يحقّ لك بها.

- **إذا كنت ترغب في المشاركة في هذه الدراسة ، يرجى الاتصال أو إرسال رسالة أو البريد الإلكتروني إلى:**

نضال ضو
أستاذة مساعدة في علم النّفس
الجامعة الاميركية في بيروت
البريد الالكتروني: nn07@aub.edu.lb
المكتب: 01-350000 تحويلة 4360/4376

ستيفاني د. سرور
طالبة متخرّجة
الجامعة الاميركية في بيروت
البريد الالكتروني: sds06@mail.aub.edu

هل أنت أم لطفل عمره بين 4 و 20 ؟

هل ترغب في أن تكون جزء من مشروع بحثي ؟

- أنت مدعو للمشاركة في دراسة بحثيّة التي ستدرس التكيف النفسي لعينة اللبنانية من الأطفال الذين تتراوح أعمارهم بين 4 و 20. من أجل المشاركة في هذه الدراسة ، يجب أن يكون لديك ولدين على الأقل . سوف يطلب منك الإجابة على المسح الذي يتجاوز بين 45 - 60 دقيقة للملأ. وستتم الدراسة في المكان المناسب للمشترك.

- **الفوائد المحتملة:** الفائدة المحتملة من خلال المشاركة في هذه الدّراسة تساعد في زيادة المعرفة المتعلّقة بتكيّف نفسي الأطفال في المجتمع اللّبناني ,حيث الأبحاث حول هذا الموضوع نادرة. فائدة محتملة أخرى هي أنك قد تصبح على علم ببعض العوامل التي هي ذات الصلة لتكيّف النفسي للأطفال. سيكون لديك أيضا فرصة ربح احدى بطاقات الهدايا الثّلاث بقيمة 50,000 ليرة لبنانية الواحدة.

- **المخاطر:** ليس هناك أي خطر جسدي أو نفسي متوقّع جرّاء المشاركة في هذه الدّراسة يتخطّى الحدّ الأدنى من المخاطر الّتي تواجهها عادة في الحياة اليوميّة أو خلال أداء تقييم جسدي أو نفسي روتيني. ولكن رغم ذلك هناك نسبة امكانيّة لحصول مخاطر غير متوقّعة.

- **البدائل:** مشاركتك في هذه الدّراسة عمل تطوّعي تماما و يمكنك عدم المشاركة دون أي تحيّز, أو عقوبة, أو خسارة فوائد يحقّ لك بها.

- **إذا كنت ترغب في المشاركة في هذه الدراسة ، يرجى الاتصال أو إرسال رسالة أو البريد الإلكتروني إلى:**

نضال ضو
أستاذة مساعدة في علم النّفس
الجامعة الاميركية في بيروت
البريد الالكتروني: nn07@aub.edu.lb
المكتب: 01-350000 تحويلة 4360/4376

ستيفاني د. سرور
طالبة متخرّجة
الجامعة الاميركية في بيروت
البريد الالكتروني: sds06@mail.aub.edu

Are you a MOTHER of a child with Autism ?

ARE YOU INTERESTED IN BEING PART OF A RESEARCH PROJECT?

- You are invited to participate in a research study which will examine the psychological adjustment of siblings of children with autism. In order to be able to participate in this study you must have at least two children within the age range of 4-18 years. The results of this study may help in the development of effective trainings that will help parents develop various strategies to protect siblings of children with autism for positive psychological adjustment. You will be asked to answer a survey that will require between 45-60 minutes of your time and will take place wherever convenient for you

- **Risks:** There are no foreseeable physical or psychological risks involved with participating in this study that exceed minimal risks ordinarily encountered in daily life or during performance of routine physical or psychological evaluation, although the possibility of some unforeseeable risks exists.

- **Benefits:** By taking part in this study you may develop a new understanding about the impact of children with autism on their siblings. Additionally, you will help in increasing knowledge pertaining to the psychological adjustment of siblings of children with autism in the Lebanese context. You will also have a chance to win one of three gift cards with a value of 50,000 LBP each. Your participation in this study is completely **voluntary**, and you may decide not to participate without prejudice, penalty, or loss of benefits to which you are otherwise entitled. **If you are interested in participating in this study, please call, send a message or email to:**

Nidal Daou, Ph.D.
Assistant Professor of Psychology
American University of Beirut
Email: nn07@aub.edu.lb
Office: 01-350000 Ext 4376/4360

Stephanie D. Srour
Graduate Student
American University of Beirut
Email: sds06@mail.aub.edu

Are you a mother of a child between the ages of 4 & 20?

ARE YOU INTERESTED IN BEING PART OF A

RESEARCH PROJECT?

You are invited to participate in a research study which will examine the psychological adjustment of a Lebanese sample of siblings of children who are between the ages of 4 and 20. To be able to participate in this study you must have at least two children. The results of this sample will be compared to the psychological adjustment of sibling of children with autism.

- You will be asked to answer a survey that will require between 45-60 minutes of your time and will take place wherever convenient for you.

- **Benefits:** Participating in this study will help in increasing knowledge pertaining to the psychological adjustment of children in the Lebanese context, a place where research on this topic is scarce. By taking part in this study you may develop a new understanding about the impact of children with autism on their siblings. Another potential benefit is that you might become aware of some factors that are relevant for the psychological adjustment of children especially siblings of children with Autism. You will also have a chance to win one of three gift cards with a value of 50,000 LBP each.
- **Risks:** There are no foreseeable physical or psychological risks involved with participating in this study that exceed minimal risks ordinarily encountered in daily life or during performance of routine physical or psychological evaluation, although the possibility of some unforeseeable risks exists.
- **Alternatives:** Your participation in this study is completely **voluntary**, and you may decide not to participate without prejudice, penalty, or loss of benefits to which you are otherwise entitled.
- **If you are interested in participating in this study, please call, send a message or email to:**

Nidal Daou, Ph.D.
Assistant Professor of Psychology
American University of Beirut
Email: nn07@aub.edu.lb
Office: 01-350000 Ext 4376/4360

Stephanie D. Srour
Graduate Student
American University of Beirut
Email: sds06@mail.aub.edu