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FAMILY FUNCTIONING AND MATERNAL STRESS IN FAMILIES OF CHILDREN WITH AUTISM

A Thesis

Presented to the

Faculty of

California State University,

San Bernardino

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

in

Psychology:

General/Experimental

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by

Charmaine Marcella Puentes

December 2012

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December 2012

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ABSTRACT

The present study evaluated the relationship between domains of family functioning and maternal stress in families of children with Autism Spectrum Disorders (ASD) and families of typically developing (TD) children. The ASD group consisted of parents of children with an ASD diagnosis currently receiving services at an on-campus center and the community group consisted of parents of TD children. Parents in both groups completed a survey as part of a larger, ongoing research project. For this study, data were accessed from an archival database, with the Gilliam Autism Rating Scale-2, the Family Environment Scale and the Parenting Stress Index the instruments being assessed. Consistent with the hypothesis, results indicated mothers of children with ASD had higher parental stress than mothers of typically developing children. It was also evaluated whether the family environments of families of children with ASD differed from those of families of typically developing children. No differences were found on the three dimensions of family environment: Relationships, Personal Growth or System Maintenance. This study further examined whether some domains of family environment were more closely associated with stress than

others and whether these relationships were moderated by group membership. Results from this study suggest families of children with ASD maintain family functioning similar to that of families of typical children despite the higher levels of stress reported by mothers.

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CHAPTER ONE

INTRODUCTION

There are unique difficulties associated with raising a child with special needs (Rousey, Best, & Blacher, 1992) Characteristics such as communication deficits and problematic behavior create unique stressors for families of children with developmental disabilities (Rao & Beidel, 2009). Parents of children with developmental disabilities report more stress than parents of typically developing children (Baxter, Cummings, & Polack, 1995; Higgins, Bailey, & Pearce, 2005; Roach, Orsmond, & Barratt, 1999). Specifically, parents of children diagnosed with autism spectrum disorder (ASD) have been found to report higher amounts of stress than parents of typically developing children (Hoffman, Sweeney, Hodge, Lopez-Wagner, & Looney, 2009) and parents of children with other disabilities (Kasari & Sigman, 1997; Norton & Drew, 1994; Sanders & Morgan, 1997). This increased parental stress has been shown to be related to the behavioral characteristics of children with ASD (Tomanik, Harris, & Hawkins, 2004; Rao & Beidel, 2009). From a contextual perspective, that is looking at the child as being nested within the

family environment (Sweeney & Hoffman, 2004), it would be expected that the increased stress experienced by parents of children with ASD would be deleterious to family functioning. The goal of this study was to examine both parental stress and the relationship between domains of family environment in families of children with ASD as compared to families of typically developing children. Detecting potential differences in how these respective families function would contribute to elucidating the differences in family processes related to parenting children with challenging developmental disorders.

Although the presence of a child with ASD affects both parental stress and family environment (Dyson, 1991) prior research has not studied the relationship between these variables (Manning, Wainwright, & Bennett, 2011; Rao & Beidel, 2009). The relationship between the stressors related to caring for a child with ASD and family functioning can be viewed as interactive and should be examined as such in order to fully understand variables affecting family environment. Examining the variables separately does not give a representative picture of the interactive nature or way these variables mutually impact one another. Within the context of developmental

disabilities, the present investigation examined parental stress and family functioning in families of children with ASD from the perspective of Bronfenbrenner's (1992) ecological theory of human development. Within this framework, children are viewed as being nested within interrelated systems that influence one another within the family dynamic (Bronfenbrenner, 1992; Sontag, 1996). Conceptualizing the family environment contextually allows for characteristics specific to ASD to be studied in relation to how they interact with parental stress and how, in turn, stressors associated with raising a child with ASD may impact overall family functioning (Sweeney & Hoffman, 2004).

The Relationship between Autism and Parental Stress

In order to receive a diagnosis of ASD, a child must have impairments in three core areas, often referred to as the "autistic triad" (Levy, Mandell, & Schultz, 2009; Rellini, Tortolani, Trill, Carbone, & Montecchi, 2004). To obtain a diagnosis, the DSM-IV(APA, 2000) requires, at minimum, two impairments in the area of social interaction (such as poor eye contact, difficulties in reciprocal interactions, impairments in responding to social cues),

one impairment in communication (for example, failure to seek joint attention and use gestures such as pointing) and one impairment in the area of restricted/repetitive behavior (for instance, hand flapping, lining up toys or objects, or inflexibility with routines)(APA, 2000). The disorders on the autism spectrum are autistic disorder, Asperger's syndrome, and pervasive developmental disorder-not otherwise specified (PDD-NOS).

Raising a child with ASD has been found to be especially challenging (Lainhart, 1999). Parents of children with ASD are exposed to distinctive stressors as compared to parents of children with other developmental disabilities (Randall & Parker, 1999), reporting more behavior and family problems than parents of children with mental retardation (Donovan, 1988). Behavioral characteristics of children with ASD have been found to be particularly difficult (Koegel et al., 1992; Perry, Harris, & Minnes, 2004), with parents of children with ASD reporting that they are more stressed by their children's characteristics and difficult temperament than parents of typically developing children (Kasari & Sigman, 1997). Repetitive behavior, lack of responsiveness, and temperament have each been found to contribute to stress in

parents of children with ASD (Donenberg & Baker, 1993; Norton & Drew, 1994). The effects of these challenges may be extended to the family unit (Crnic, Friedrich, & Greenberg, 1983; Dyson, 1997).

Family Environment

High levels of stress experienced by parents of children with ASD may lead to different types of interactions with their children compared to the interactions between parents and typically developing children (Kasari & Sigman, 1997). The different characteristics of these families may result in distinct patterns of family functioning for these respective families. It is the goal of this study to examine the differential amounts of stress reported for families of children with ASD and families of typical children and examine stress in relation to family functioning for these respective families.

It is necessary to compare the relationship between stress and family environment for families of children with ASD and families with typically developing children. The high levels of stress reported in parents of children with developmental disabilities (e.g.,Beckman, 1983; Dyson &

Fewell, 1986; Hoffman et al., 2009) suggest that this stress may negatively impact the family (Frey, Greenberg, & Fewell, 1989). Even with presumably higher levels of stress, research examining family environment in families of children with developmental disabilities compared to families of typical children have found that the family environments are similar (Dyson, 1991; Kazak, 1987; Mahoney, O'Sullivan, & Robinson, 1992; Perry et al., 2004). That is, despite high levels of stress, families of children with developmental disabilities have been found to have healthy family functioning (Dyson, 1997). However, the construct of family environment is broad and studies have not examined family environment systematically between these groups (Dyson, 1991; Mahoney et al., 1992; Rao & Beidel, 2009).

Although family environments have not been systematically assessed, the family environment has proven to be a good predictor of parental stress in families with children with developmental disabilities (Dyson, 1993; Perry, et al. 2004). The Family Environment Scale (FES; Moos & Moos) was designed to assess the social-environment within the family system and has been widely used in the

literature to measure family functioning. Importantly, it has been used to successfully assess the environments of families of children with developmental disabilities (Dyson, 1991; Keller & Honig, 2004 Mahoney et al., 1992; Perry et al., 2004) and in families of children with ASD (Heiman & Berger, 2008; Manning et al., 2011; Rao & Beidel, 2009). The term "family environment" refers to the social and environmental qualities of the family and can be conceptualized as having multiple domains (Moos & Moos, 1981). The construct includes aspects of functioning within three dimensions: interpersonal relationships, personal growth and system maintenance.

The FES consists of ten subscales within the three dimensions. The System-Maintenance domain contains the subscales of organization and control. This domain measures the amount of planning and rules that are used to run daily life. Personal Growth with the subscales of achievement, independence, active-recreational orientation, religious-moral emphasis, and intellectual-cultural orientation, measures aspects such as emphasis on religion, participation in social activities and the amount of independence of family members. The relationships domain

consists of cohesion, expressiveness and conflict. This domain measures how emotions and conflicts are expressed within the family.

Domains of Family Environment in Developmental Disabilities

Some studies have found no differences in family functioning of families of children with developmental disabilities and families of typically developing children (Dyson, 1991; Mahoney et al., 1992; Perry et al., 2004). Although few differences have been found between the overall family environments of families of children with developmental disabilities and families with typically developing children, when specific aspects of family environment are examined several differences emerge. Some studies have found families of children with disabilities to have poorer functioning in particular aspects of family environment (Mahoney et al., 1992; Perry et al., 1992). Families of children with developmental disabilities were found to have lower scores in the Personal Growth dimension as shown by less engagement in recreational activities as compared to normative data (Mahoney et al., 1992). Parents of children with Rett syndrome were also found to have

poorer scores in Personal Growth areas with these families having less independence and less participation in recreational activities than normative data (Perry, Serlo-McGarvey, & Factor, 1992). This finding suggests that families of children with disabilities may be making sacrifices in areas of Personal Growth whereas families of typical children are not.

Supporting the contention that specific domains of family functioning may differ for families of children with developmental disabilities, Dyson (1991) found no differences between the family environments of families of children with and without developmental disabilities, however, when specific subscales were examined, group differences emerged and a distinct style of family functioning was found. These findings suggest a need for closer examination of the dimensions of family environment. It may be necessary to look at specific components to elucidate group differences in family functioning. There is research to suggest that families of children with developmental disabilities have better functioning in particular areas (Dyson 1991; Mahoney et al., 1992).

Dyson, (1991) in her study of family functioning, found that families of children with disabilities have been found to place more emphasis on control, achievement, and moral-religious orientation than families of typical children. Similarly, Mahoney et al., (1992) found that families of children with disabilities placed more emphasis on moral-religious orientation than the normative sample. Other research has found that families of children with disabilities have higher family harmony scores (Relationship Dimension) than normative data (Keller & Honig, 2004; Mahoney et al., 1992). These findings suggest that families of children with developmental disabilities have better communication and cohesion which contribute to positive relationships between family members.

It may be that families of children with developmental disabilities have a different pattern of family functioning that allows them to maintain positive family functioning in spite of the increased stressors these families experience. Research has found that despite having a distinct style of functioning, families of children with disabilities do not show distressed family functioning overall (Dyson, 1991; Perry et al., 2004). It is possible that the areas of

strengths identified in these studies (e.g., relationships) are compensating for areas of deficit (e.g., personal growth) as suggested by Dyson. It may be that these families have better functioning in specific domains of family environment that contribute to the overall healthy family functioning despite increased stress.

Family Environment in Autism

Because parents of children with ASD experience greater stress than parents of children with other developmental disabilities, it might be expected that they would display distressed family functioning (Perry et al., 2004). Several studies have shown that stress negatively impacts parents (Fisman, Wolf & Noh, 1989; Gray & Holden, 1992). A few studies have supported this contention regarding stress Higgins et al., 2005; Rodrigue, Morgan & Geffken, 1990). Some studies found family adaptability and cohesion to fall outside the healthy range for families of children with ASD but not for families of typical children (Higgins et al., 2005) or children with Down syndrome (Rodrigue et al., 1990).

However, as with the findings of other developmental disabilities, other researchers have found that family environment is not poorer for families of children with ASD (Koegel, Schreibman, O'Neill, & Burke, 1983; Manning et al., 2011; Sanders & Morgan, 1997). As suggested by Dyson (1991) for families of children with developmental disabilities, families of children with ASD may be employing strengths in specific dimensions of family environment that can contribute to overall healthier family functioning. For instance, Heiman and Berger (2008) found families of children with ASD to have higher scores in the dimension of System Maintenance (control and organization) than families of children with learning disabilities or families of typical children. A more highly controlled, organized environment may be efficient in managing inflexibility and rigidity in behavior often seen in children with ASD. Although high levels of control and organization may be detrimental or unnecessary for families with typical children, families of children with ASD may benefit from having a highly structured environment.

Similar to findings for research with families of children with other developmental disabilities, families of

children with ASD have been found to score higher than in aspects of the Relationships Dimension than families of TD children (Manning et al., 2011). Better communication between family members has been reported to help families adapt to the stressors related to living with a child with ASD (Greeff & van der Walt, 2010). These findings suggest that high scores on the Relationship Dimension may be working to lessen the effects of stress and result in overall healthy family functioning.

Taken as a whole, it seems that difficult behavior characteristics such as those seen in children with autism, may be affecting families of children with ASD in the area of stress (Tomanik et al., 2004). However, families of children with ASD do not appear to evidence overall family functioning indicative of distress (Manning et al., 2011; Sanders & Morgan, 1997). It may be that the dimensions for which families of children with ASD are doing better than families of typically developing children may reflect ways in which aspects of the family environment are helping to overcome negative impacts of stress. Although families of children with ASD may have patterns of family functioning

that are distinct from families of typical children, they may still be able to achieve a positive family environment.

Relationship between Family Environment and Stress

Dyson (1993) found more positive family relationships to be associated with lower levels of stress in families of children with developmental disabilities. This is particularly important for families of children with ASD, as parents of children with ASD have been shown to have extremely high stress related to caring for their children. Prior research has also found family harmony, as measured by expressiveness, cohesion and conflict, aspects of the Relationship Dimension, to be a mediating factor for the effects of stress related to caring for children with developmental disabilities (Keller & Honig, 2004). However these studies have not looked at these variables within a contextual frame.

To date, researchers have not simultaneously investigated both family environment and stress in families of children with developmental disabilities and ASD. Studying these constructs univariately fails to capture the true nature of the functioning of parents of children with ASD. By studying family environment in families of

children with ASD using a family-centered approach as suggested by Sweeney & Hoffman (2004), the relationship between these variables may be better understood. The present study is needed to clarify these inconsistent findings on family environment in families of children with ASD. The design of this study constructed a much clearer framework for examining these relationships, as it employed a contextual approach, considering both parental stress and family environment.

Rationale for Study

The goal of this study was to first compare levels of maternal stress and family environment in families of children with ASD and families of typically developing children. This study then examined the relationship between family environment and stress in families of children with ASD and families of typically developing children to assess whether this relationship is moderated by group (i.e., families of children with ASD and families of TD children).

Many studies have examined family environment by looking at dimensions of the FES (Dyson, 1991; Dyson, 1993; Heiman & Berger, 2008; Mahoney et al., 1992). This

approach may be inadequate to identify specific aspects of family environment and how they interact with parental stress. It is necessary to look at the relationship between family environment and parental stress for both families of children with ASD and families of typically developing children. Prior research has assessed the family environment and parental stress by solely examining group differences. The rationale for this study is as follows: although parents of children with ASD have been found to report greater stress than families of typically developing children, not all of the research has shown differences in family environment. Contradictory evidence as shown by the mixed findings has created the need for a contextual approach to assess stress and family functioning in families of children with ASD and families of typically developing children. This study assessed group differences as well as the relationship between these variables as suggested by the family centered approach.

The purpose of the present study was to evaluate the relationship between the domains of family environment and parental stress and to assess whether this relationship is different for families of children with ASD and families of

typically developing children. For the purpose of this study, Child-Related parenting stress will be assessed. Child- related parenting stress measures stress directly related to child behavior characteristics and has been widely used to assess child-related stress in parents of children with ASD (Hoffman et al., 2009; Tomanik, 2004) By comparing the relationship between the dimensions of family environment and Child-Related parenting stress, as well as looking specifically at families of children with ASD and community comparison group, the methodological approach used allowed for clarification of the previous findings in the area of family environment in families of children with ASD.

Prediction

First, based on prior research in the area, it was predicted that mothers of children with ASD would report higher parental stress on the Child Domain of the PSI than mothers of typically developing children. Second, due to prior contradictory findings in the literature, exploratory analyses were run to assess group differences on the dimensions of family environment. Group differences were examined to assess whether families of children with ASD

have family environments comparable to families of typically developing children by looking at the three dimensions of the FES. This study also tested whether some dimensions of family environment were more closely associated with stress than others and whether the nature of these relationships was moderated by group membership. That is, the strength of the relationship between each FES dimension and stress was assessed for families of children with ASD and families of neurotypical children to determine whether the relationships are stronger for one group than the other. Due to previous research reporting inconsistencies regarding family environment for these groups, no prediction was made as to which specific dimensions of family environment would be more strongly related to stress. Post Hoc analyses were run to examine subscales for interaction effects.

CHAPTER TWO

METHOD

Participants

Autism Sample

Participants for the autism sample were 75 mothers of children with an independent diagnosis of ASD. Participants were drawn from an ongoing, research-based program at a University in southern California. This center-based program includes supplemental behavioral intervention and parent training. Children who receive services at the center were referred from a state Regional Center. Each week, consumer children attend a two and a half hour behavior therapy session while parents attend a parental support group in a nearby location. All consumer children eligible for this study had an independent autism diagnosis (as specified by the DSM-IV TR; APA, 2000) from the referring agency, school district or physician. Further, children eligible for participation had a score of 85 or greater (M = 101.67, SD = 12.8) for the Autism Index score (AI) on the Gilliam Autism Rating Scale, Second Edition (GARS-2) which indicates a high likelihood of autism. From the larger dataset, 75 mothers were selected

whose children met these diagnostic criteria as well as had complete questionnaires.

Community Sample

A control group consisting of parents in the community was obtained to serve as a means for comparison to the autism sample. Children reported by parents in the community group as having exceptionality were not included in the final sample. Data were collected from 342 participants at a university campus and the surrounding area. From this larger sample, participants were matched on maternal age, age of child, and child's gender to participants in the autism sample as these variables have been identified to be related to parental stress (Bouma & Schweitzer, 1990; Gray & Holden, 1992).

Group Characteristics

Each group consisted of 75 participants that met prerequisite diagnostic criteria. Participants were matched on child's gender, child's age within 12 months and mother's age within 12 months. Children's age ranged from 4-14 years in both groups. The mean age for the ASD group was 8.38 (*SD* = 2.6) while the mean age for the community group was 8.51 (*SD* = 2.6). As groups were matched on children's gender, both groups were comprised of 13 females

and 62 males. Mothers' age ranged from 22 to 51 for both groups. The mean age for mothers in the ASD group was 37.14 (*SD* = 6.0) and the mean age for mothers in the community group was 37.00 (*SD* = 5.9). Additional demographic information is presented in Table 1.

Table 1

Demographic Information for Autism and Community Samples (%)

Demographic	Autism (N = 75)	Community (N = 75)
Child's Ethnicity		
White/ Caucasian	44.0	45.3
Hispanic	21.3	28.0
African American	17.3	6.7
Asian/ Pacific Islander	4.0	4.0
Mixed/Other	13.4	16.0
Income Level		
Less than $24,000	13.3	10.7
$24,000-$35,999	9.3	18.7
$36,000-$47,999	17.3	5.3
$48,000-$59,000	13.3	9.3
$60,000-$71,999	5.3	20.0
$72,000	37.3	33.3
Missing data	4.0	2.7

Measures

Autistic Severity

In order to be eligible for participation in this study, consumer children must have an independent diagnosis of autism. Further, the Gilliam Autism Rating Scale, Second Edition (Gilliam, 2005) was used as a measure for participant selection. The GARS-2 is a parent/teacher report instrument designed to assess symptoms of autism in the areas of communication, stereotypical behavior and social interaction. An Autism Index (AI) score was computed to give an overall score to measure the probability of autism with a higher score indicating greater severity (M = 100, SD = 15). An AI score of 85 or greater was needed for inclusion in the study.

Family Functioning

The Family Environment Scale (FES; Moos & Moos, 1983) was used to assess the functioning of the family system as a whole and is representative of family processes. The FES is widely used in research and applied settings as a measure of overall family functioning. The FES has been used to assess family functioning in several studies of families of children with ASD (e.g., Manning et al., 2011;

Rao & Beidel, 2009; Sanders & Morgan, 1997). The FES consists of 90 items rated true or false, that measure a parent's perception of the family environment. The FES consists of ten subscales within three dimensions: System-Maintenance Dimension (organization and control), Personal Growth Dimension (achievement, independence, active-recreational orientation, religious-moral emphasis, and intellectual-cultural orientation) and Relationships Dimension (cohesion, expressiveness and conflict). Higher scores on these dimensions indicate higher familial emphasis on that construct.

Parental Stress

Participants completed the Parenting Stress Index (Abidin, 1995). The PSI is a 101-item questionnaire designed to measure total parenting stress. The PSI has been used to assess parenting stress in many studies examining stress of parents of children with ASD (e.g., Hoffman et al., 2009; Keller & Honig, 2004; Tomanik et al., 2004). Items were rated on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The PSI assesses Child Domain stress, Parent Domain stress and Total Parenting stress. This study assessed Child-related stress. Child-related stress measures the parenting stress

that arises from the child's behavior (e.g., "My child turned out to be more of a problem than I had expected") where higher scores indicate higher stress. A total Child Domain score is calculated by summing the six subscales: Acceptability (7 items), Adaptability (11 items), Demandingness (9 items), Distractibility/ Hyperactivity (9 items), Mood (5 items), and Reinforces Parent (6 items). Parent related stress is indicative of stress that is related to the functioning of the parent (e.g., "When I think about the kind of parent I am, I often feel guilty or bad about myself") where higher scores indicated higher parenting domain stress. A Parent Domain score is calculated by summing seven subscales: Attachment (7 items), Competence (33 items), Depression (9 items), Isolation (7 items), Health (5 items), Role Restriction (7 items), and Spouse Related Stress (7 items). In addition, a Total Stress score is calculated by summing the child domain score and parent domain score. The Child Domain, Parent Domain and Total Stress scores have a .90 internal consistency (Abidin, 1995). Test-retest reliabilities have been found for the Child Domain .63 - .82, Parent Domain .69 - .91 and Total Stress score .65 - .88 (Abidin).

Procedure

A questionnaire was administered as part of a larger, ongoing research study at a University located in inland southern California. Partial counterbalancing was used to create a form A and form B of the survey to reduce potential order effects of the measures in the packet. For the original data collection, research assistants distributed surveys to participants at a college campus in southern California to obtain the community sample. Completion of the survey packet took approximately 45 minutes. Packets were collected one week after distributing them. Participants were offered extra credit towards a course of their choice for completing the survey. UCDD participants were contacted during their parent support group. To ensure confidentiality, participants were instructed to seal the provided envelope and return completed packets to research assistants. After packets were returned, they were examined to verify completion. For the present study, these archival data were accessed from a secure database at the University Center for Developmental Disabilities.

Statistical Analyses

Univariate analyses were run to evaluate means for all variables used. An independent samples *t*-test was run to assess mean differences in child-related parenting stress. Mean differences on the domains of family functioning were assessed for both families of children with ASD and families of typically developing children. Multiple regression analyses were used to assess the predictive strength of the family environment dimensions on Child Domain parenting stress for the two groups. First, separate correlations were run between each predictor variable (IV): relationships, system maintenance, and personal growth and the outcome variable (DV): total parenting stress. Moderation was then tested for each IV by centering the variables. An interaction term was created by using each predictor variable and the moderator (e.g., system maintenance X group, relationship X group, and personal growth X group). Moderation is detected when the interaction term is significant.

CHAPTER THREE

RESULTS

The results of an independent samples *t*-test confirmed the first hypothesis. Mothers of children with ASD were found to report higher Child-Related Parenting Stress (M = 148.03, SD = 21.5) than mothers of typically developing children (M = 96.64, SD = 24.1 see Table 2 for complete analysis). Mothers of children with ASD were also found to report higher Parent-domain parenting stress (M = 141.97, SD = 30.20) than parents of typical children (M = 114.82, SD = 29.35) $t(136) = 5.35$, $p < .001$. Additionally, the results of independent *t*-tests revealed significant group differences for total parenting stress $t(136) = 9.51$, $p < .001$. Mothers of children with ASD reported higher total parenting stress (M = 288.94, SD = 48.0) than mothers of typically developing children (M = 210.30, SD = 49.2).

The family environments of families of children with ASD and families of typically developing children were also evaluated for group differences. Results of a MANOVA for the Relationships, Personal Growth, System Maintenance and Child-related parental stress indicated no significant differences between the ASD group and community group for

any of the dimensions, Wilks's Lambda = .96, $F(3,146)$ = 1.54, *ns*. There were no significant differences between families of children with ASD and parents of typically developing children for the Relationship Dimension, Personal Growth Domain or the System Maintenance Domain (see Table 2 for means).

Table 2

Means and Standard Deviations for Family Environment Domains and Parenting Stress Index Child Domain for Groups

	Autism (N = 75)		Community (N = 75)		
	M	*SD*	*M*	*SD*	*F*
PSI Child Domain	148.03	21.5	96.64	24.1	190.04***
FES Domain					
Relationship	9.09	4.6	10.13	4.5	1.9
Personal Growth	28.61	6.3	28.73	5.2	.02
System Maintenance	.44	2.6	.16	2.3	.49

*$p < .001$

In order to examine the relationship between each of the three FES dimensions and Child-related Stress, three regression analyses were run to assess whether the relationship between each dimension of family environment and Child-related Parental Stress differed by group. These relationships were also tested for moderation to assess whether the relationship between each FES dimension and stress were moderated by group membership.

For each of the analyses for the three FES dimensions, a hierarchical regression was run to assess the predictive strength of the FES dimension on Child-related parenting stress. The Relationship dimension was found to significantly predict Child-Related Parenting Stress for both groups combined $b = -2.2$, $t(73) = -4.42$, $p < .001$. There was no significant interaction effect found (see Table 3 for complete analyses).

Table 3

Summary of Regression Analyses for Family Environment Scale Dimensions Predicting Parental Stress (N = 150)

	Model 1			Model 2		
Variable	*B*	*SE B*	β	*B*	*SE B*	β
Relationship	-2.57	0.36	.34*	-2.22	0.50	-.29*
Group	-48.71	3.2	-.71*	-48.71	3.2	-.71*
Relationship x Group				-.72	.72	-.07
R^2		.68			.68	
Personal Growth	-1.05	.31	-.18	-.81	0.41	-.14*
Group	-51.26	3.6	-.75*	-51.25	3.6	-.75*
Personal Growth x Group				-.58	.64	-.06
R^2		.59			.60	
System Maintenance	-2.68	.74	-.19*	-2.83	.99	-.20*
Group	-55.14	3.6	-.76*	-52.13	3.6	-.76*
System Maintenance x Group				.35	1.50	-.02

R^2	.60	.60

*FES dimensions were centered at the means

A hierarchical regression was also conducted to assess the predictive strength of the Personal Growth Dimension of the FES and Child-related Parenting Stress. Personal growth was found to significantly predict Child-related Parenting Stress b = -.81, $t(73)$ = -1.99, p < .05 (see Table 3 for complete analyses). No significant interaction effect was found, indicating that this relationship was not moderated by group membership. Lastly, a hierarchical regression was run to determine the predictive strength of the family environment dimension of System Maintenance on Child-related Parenting Stress. System Maintenance was found to significantly predict Child-related Parenting Stress b = -2.8, $t(73)$ = -2.86, p < .01 (see table 3 for complete analyses). No significant interaction effect was found between system maintenance and group membership suggesting that this relationship is not stronger for a particular group.

Analysis of Family Environment Scale Subscales

Exploratory analyses were conducted for the ten subscales of family environment. As suggested by Dyson (1991) distinct patterns of functioning may be revealed by examining specific subscales of family environment. Pearson correlations were run between FES subscales and Child-related Parenting Stress to assess whether FES subscales were related to stress similarly for both groups. In the Personal Growth Domain, Intellectual-Cultural Orientation was found to be significantly correlated with stress for families of typical children (r = -.23, p < .05) but not for families of children with ASD (r = -.17, *ns*). Conversely, in the System Maintenance dimension, the subscale Control was found to be significantly correlated with stress for families of children with ASD (r = .26, p < .05) but not for families of typically developing children (r = .17, *ns*). The subscale, Moral-Religious Emphasis was found to be associated with stress differently based on group. Although not significant, an interesting directional relationship was found. Families of children with ASD had a positive correlation between Moral-Religious Emphasis and stress (r = .03, ns) while families of

typically developing children had a negative correlation between Moral-Religious Emphasis and stress (r = -.14, *ns*).

Regressions were performed between the ten FES subscales and Child-related Parental Stress to assess relationships between each group. Results of moderation regression analyses revealed interaction effects for the relationship between stress and the subscale Achievement Orientation, b = 5.69, $t(73)$ = 2.57, p < .05. The relationship between Achievement Orientation and parental stress differs for families of children with ASD and families of typically developing children. For families of typically developing children, a higher emphasis on Achievement is associated with higher parental stress. In families of children with ASD, it seems that a higher emphasis on achievement is associated with lower parental stress. Achievement Orientation interacts with stress differently on the basis of group membership.

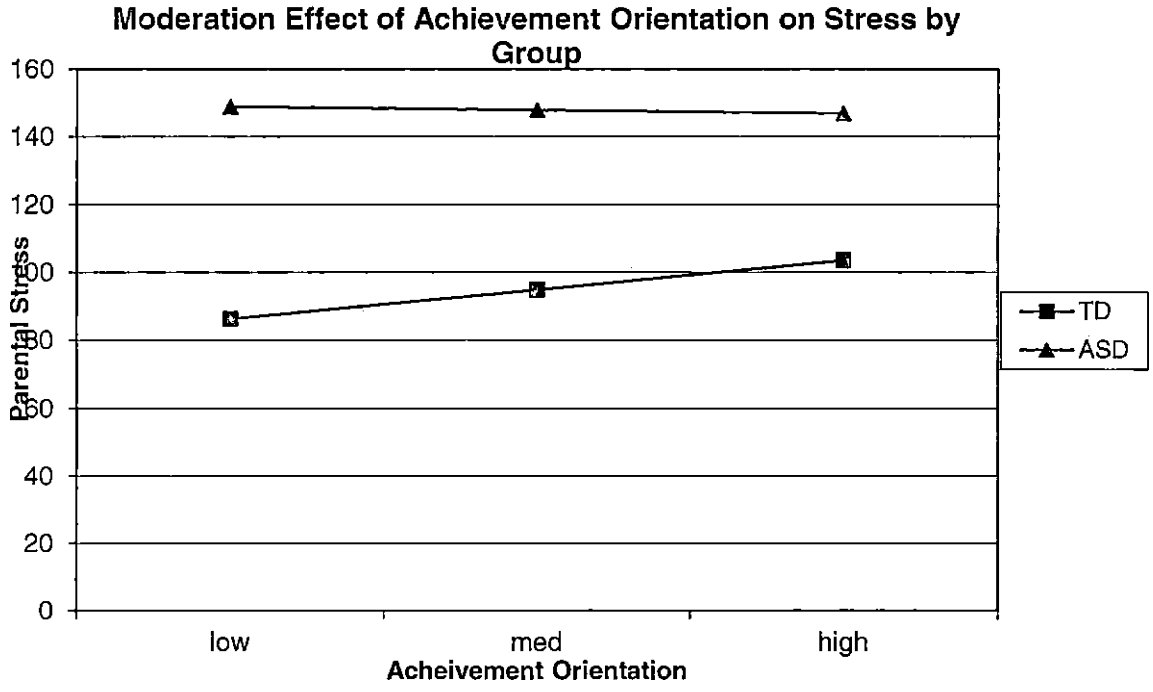

Figure 1. Moderation of Achievement Orientation on Stress by Group.

CHAPTER FOUR

DISCUSSION

The present study evaluated the relationship between family functioning and mothers' parental stress for families of children with ASD and families of typically developing children. Consistent with prior findings, results supported the first hypothesis with mothers of children with ASD reporting greater Child-related Parental Stress than parents of typically developing children. This finding is consistent with prior research findings (e.g., see Hoffman et al., 2009). Additionally, mothers of children with ASD were found to report significantly higher Parent-domain Parenting Stress and Total Parenting Stress than mothers of typically developing children.

The three dimensions of family environment: Relationships, Personal Growth, and System Maintenance were examined to assess for differences between families of children with ASD and families of typically developing children. Results suggested that there were no significant differences on the Relationship dimension, Personal Growth dimension or System Maintenance dimension of family environment between families of children with ASD and

families from the community sample. Families of children with ASD and families of typically developing children were found to not differ in family environment.

Taken together, these findings suggest that families of children with ASD are able to maintain family functioning similar to that of families of typical children despite parental reports of higher stress. This finding supports previous research that has found families of children with ASD do not differ to families with typically developing children (Rao & Beidel, 2009; Rodrigue et al., 1990; Sanders & Morgan, 1997). However, these present findings are inconsistent with prior research that found families of children with ASD to have distinct aspects family environments when compared to families of typical children (Heiman & Berger, 2008; Manning et al., 2011).

This study sought to examine the relationship between each of the three FES dimensions and Child-related Stress to determine whether some of the dimensions were more strongly associated with stress. Moderation was also tested to see whether these relationships were similar for families of children with ASD and families of typical children. The Relationship dimension of family environment

significantly predicted Child-related parental stress for the group as a whole. The Personal Growth dimension of family functioning also significantly predicted Child-Related parental stress. Lastly, the System Maintenance dimension of family functioning significantly predicted Child-related parental stress. However, these relationships were not moderated by group. That is, the strength of the relationship between these dimensions of family environment and stress did not differ between families of children with ASD and families of typically developing children. The relationship between Relationships, Personal Growth, System Maintenance and Stress was similar for both groups. Despite mothers of children with ASD reporting significantly more Child-related Stress, no differences were found on Relationships, Personal Growth or System Maintenance dimensions of family environment. Although mothers of children with ASD report high levels of stress it seems as though family functioning is not adversely affected.

Although no differences were detected for dimensions of family environment, based on prior inconsistent findings, a closer examination of the family environments

was conducted by assessing the relationship between each FES subscale and Child-related Stress. Examining the subscales will allow for distinct patterns of functioning to be discovered. Subtle differences such as differences in subscales may have been undetected by looking at only domains. Additional exploratory analyses were conducted in order to further inspect the relationship between the ten subscales of family environment and Child-related Stress for each group.

No differences were found for any of the subscales within the Relationships dimension. In the Personal Growth dimension, the subscale Intellectual-Cultural Orientation was found to be correlated with stress for families of typical children but not for families of children with ASD. It may be that families of children with ASD do not place as much emphasis on Intellectual-Cultural aspects. It is possible that these families are more focused on adaptive skills for their children. Within the dimension System Control, the subscale Control was found to be correlated with stress for families of children with ASD but not for families of typically developing children. Control may be less adaptive for families of typically developing children

than for families of children with ASD. Due to the behavioral characteristic of ASD such as inflexibility and preoccupation with routines and sameness, control may be very important for these families.

Moderated regressions were also run to evaluate whether certain family environment subscales were more strongly related to Child-related Parental Stress for families of children with ASD or families of typical children. In the dimension Personal Growth, the relationship between the subscale Achievement-Orientation and Child-Related parental stress was found to differ significantly for families of children with ASD and families of typically developing children. A greater emphasis on achievement was associated with higher parental stress for families of typically developing children. These findings suggest that parents of children with ASD are not experiencing greater stress related to placing a higher emphasis on achievement. This may be due to families of children with ASD not placing a high emphasis on achievement or that these families have a different understanding of achievement for their children with ASD.

One limitation to this study is the database from which the ASD sample was drawn contained children with an ASD diagnosis who were attending center-based therapy on a weekly basis. It is possible that this sample is not truly representative of the actual population of families of children with ASD. Families receiving services at the center-based program from which the sample was drawn, travel to and from the center to receive services. It is likely that the families able to attend the center-based programs are the families with the resources and capabilities to do so. Families who are experiencing distressed family functioning or who lack resources may not be able to travel to and continue attending such a program. Additionally, mothers of consumer children attend parent support groups at the center. It is probable that this sample has benefits in place that serve to ameliorate their overall functioning as a family.

One possible explanation for the lack of differences in family environments between families of children with ASD and families of typically developing children may be that the families of children with ASD can "normalize" (Bouma & Schweitzer, 1990) when they have had ample time to

adjust as a family with a special needs child. As suggested by Bouma and Schweitzer, it is possible that these families are able to cope and establish healthy family relationships. It may be due to a type of coping that families of children with ASD are able to have family environments similar to families of typical children. Future research may evaluate family adaptation in families of children with ASD in order to assess whether adaptation is one of the variables contributing to why these families have extremely high stress yet have healthy family functioning. Although family functioning is comparable to families of typically developing children, it has been suggested that there may be a cost that comes with this pattern of adaptation (Perry, Serlo-McGarvey, & Factor, 1992). Perry et al. suggest that a great deal of effort may go into the family unit and that other areas may decline as a result.

Future research may also seek to examine the mechanisms by which families of children with ASD are able to have family functioning which is comparable to families of typically developing children despite having greater stress than these typical families. Minor differences were

found between groups for subscales of family environment, future research should seek to establish other ways in which profound stress related to raising a child with ASD may be affecting the family such as adaptation or coping. Having an understanding of family functioning and stress in families of children with ASD may help to provide interventions designed to minimize effects of stress for these families. Learning about how families of children with ASD adapt to the effects of the increased stress they experience, as reflected in the challenges of raising a child with a disability, will assist in identifying other areas that may also be negatively impacted.

APPENDIX A:

INSTITUTIONAL REVIEW BOARD APPROVAL

CALIFORNIA STATE UNIVERSITY
SAN BERNARDINO

Academic Affairs
Office of Academic Research • Institutional Review Board

February 16, 2012

CSUSB
INSTITUTIONAL
REVIEW BOARD
Administrative Review.
IRB# 11074
Status
APPROVED

Ms. Charmaine Puentes
c/o: Prof. Charles Hoffman and Prof. Dani Hodge
Department of Psychology
California State University
5500 University Parkway
San Bernardino, California 92407

Dear Ms. Puentes:

Your application to use human subjects, titled, "Family Functioning and Parental Stress in Families of Children with Autism" has been reviewed and approved by the Chair of the Institutional Review Board (IRB) of California State University, San Bernardino and concurs that your application meets the requirements for exemption from IRB review Federal requirements under 45 CFR 46. As the researcher under the exempt category you do not have to follow the requirements under 45 CFR 46 which requires annual renewal and documentation of written informed consent which are not required for the exempt review category. However, exempt status still requires you to attain consent from participants before conducting your research.

The CSUSB IRB has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval notice does not replace any departmental or additional approvals which may be required.

Although exempt from federal regulatory requirements under 45 CFR 46, the CSUSB Federal Wide Assurance does commit all research conducted by members of CSUSB to adhere to the Belmont Commission's ethical principles of respect, beneficence and justice. You must, therefore, still assure that a process of informed consent takes place, that the benefits of doing the research outweigh the risks, that risks are minimized, and that the burden, risks, and benefits of your research have been justly distributed.

You are required to do the following:

1) Protocol changes must be submitted to the IRB for approval (no matter how minor) before implementing in your prospectus/protocol. Protocol Change Form is on the IRB website.
2) If any adverse events/serious adverse/unanticipated events are experienced by subjects during your research. Form is on the IRB website.
3) And, when your project has ended.

Failure to notify the IRB of the above, emphasizing items 1 and 2, may result in administrative disciplinary action.

If you have any questions regarding the IRB decision, please contact Michael Gillespie, IRB Compliance Coordinator. Mr. Michael Gillespie can be reached by phone at (909) 537-7588, by fax at (909) 537-7028, or by email at mgillesp@csusb.edu. Please include your application identification number (above) in all correspondence.

Best of luck with your research.

Sincerely,

Sharon L Ward. Ph.D

Sharon Ward, Ph.D, Chair
Institutional Review Board

SW/mg

cc: Prof. Charles Hoffman and Prof. Dani Hodge, Department of Psychology

909.537.7588 • fax: 909.537.7028 • http://irb.csusb.edu/
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