Associations between child behavior problems, family management, and depressive symptoms for mothers of children with autism spectrum disorder

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ABSTRACT

Purpose: The purpose of the current study was to examine the relationships between child behavior problems and mothers’ depressive symptoms and to determine whether family management mediates this relationship.

Methods: We conducted a cross-sectional survey of parents in a southeastern state. Mothers of children with ASD (n = 234) completed self-reported measures of child behavior problems, depressive symptoms, and family management using ad-hoc questions, CES-D-Boston short form, and family management measure (FaMM), respectively. We used a parallel multiple mediator model to address the study hypotheses.

Results: Children’s behavior problems were significantly associated with mothers’ depressive symptoms and with all five subscales of the FaMM. However, only the Family Life Difficulty subscale was a significant predictor of parent depressive symptoms, suggesting that Family Life Difficulty was the only mediator of the association between child behavior problems and mothers’ depressive symptoms. After accounting for the mediators, the direct effect of child behavior problems on parent depressive symptoms was non-significant.

Conclusion: As the severity of child behavior problems increased, mothers of children with ASD perceived a greater impact of ASD on their family life, which in turn increased the levels of the mothers’ depressive symptoms. Family Life Difficulty assesses parent perceptions of the extent to which their child with ASD influences family relationships and routines, suggesting a need for family-centered services that assist the family in maintaining or adapting to their routines.

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1. Introduction

The prevalence of autism spectrum disorder (ASD) among children has been characterized as an urgent public health concern (Baio, 2012), which in turn has significant implications for family life and culture in general. The overall prevalence of children diagnosed with ASD has increased over the past decade (CDC, 2014). The Center for Disease Control and Prevention (CDC) recently reported that 1 in every 68 children is born with ASD (CDC, 2014). ASD is a neurodevelopmental...
disorder that impairs social interaction and communication. Individuals with ASD display traits such as restrictive and repetitive behaviors, and they may also experience behavior problems, such as hyperactivity, impulsivity, aggressiveness, self-injurious behaviors, and temper tantrums (Lyons, Leon, Roecker Phelps, & Dunleavy, 2010).

Having a child with ASD has a significant impact on parents’ psychological well-being and family functioning. Research has demonstrated that the parents of children with ASD are at a higher risk of developing depression and less adaptive family functioning than the parents of children with other types of disabilities and parents of typically developing children (Gau et al., 2012; Higgins, Bailey, & Pearce, 2005; Hastings & Johnson, 2001; Olsson & Hwang, 2001). Mothers of children with ASD generally experience higher levels of depression than fathers (Falk, Norris, & Quinn, 2014; Ozturk, Riccadonna, & Venuti, 2014).

A growing body of research suggests that child behavior problems significantly predict maternal depressive symptoms. For instance, one study found that behavior problems were more strongly associated with depressive symptoms than ASD symptom severity and adaptive skills (Falk et al., 2014). Although managing the child’s ASD symptoms and behavior problems generates unique challenges, a study found that behavior problems were more difficult for families to manage than the child’s ASD symptom severity (Herring et al., 2006). Evidence suggests that behavior problems increased caregiver burdens, which was the strongest predictor of parents’ mental health (Khanna et al., 2011). Given these findings, an important next step for researchers is to identify whether there are factors that mediate the relationship between child behavior problems and parent depressive symptoms. In particular, the way families respond to and manage their child’s ASD may determine this relationship.

The family management style framework (FMSF) is a well-established framework that is designed to increase understanding of parents’ perceptions of the family’s management efforts (Fig. 1) (Knafl, Deatrick, & Havil, 2012; Knafl, Deatrick, & Gallo, 2008; Knafl & Deatrick, 2003). As depicted in Fig. 1, it conceptualizes the major components of families’ responses to a child’s chronic condition care and how families incorporate condition management into their everyday life; this is a key concept in the FMSF which is called “family management” (Zhang, Wei, Shen, & Zhang, 2015; Knafl et al., 2008). The FMSF shows that contextual influence contributes to the ease or difficulty of family management, and variations across components of family management result in a unique family management style. Family management style (FMS), in turn, influences the outcomes of individual and family unit functioning. The FMS is conceptualized as mediating between contextual factors and family/child outcomes (Knafl et al., 2008).

The FMSF focuses on internal family processes, beliefs, and behaviors as families incorporate condition management into everyday life, but it also acknowledges effects of sociocultural factors on families (Knafl et al., 2012). Family management is comprised of three main conceptual components and eight specific dimensions that compose each component (Table 1). The FMSF emphasizes the interplay of the dimensions including the definition of the situation, management behaviors, and perceived consequences. The definition of the situation is the subjective meaning of having a child with a chronic condition. Management behaviors are efforts or behaviors family members make to manage the condition. The perceived consequences dimension is defined as the family members’ perceptions of the consequence of the condition for family life (Knafl et al., 2012).

The eight dimensions of family management became a conceptual underpinning of the development of the Family Management Measure (FaMM) (Knafl et al., 2011). The FaMM measures six different aspects: Child’s Daily Life, Condition Management Ability, Condition Management Effort, Family Life Difficulty, View of Condition Impact, and Parental Mutuality (Knafl et al., 2011). Although the FaMM items were developed based on the eight dimensions of the FMSF, not all subscales of the FaMM are identical with each dimension of family management. All of the items of the Child’s Daily Life scale came from the child identity dimension of family management. The Condition Management Effort scale includes three items out of four from the view of illness dimension. On the other hand, items for Family Life Difficulty and the View of Condition Impact scale

![Fig. 1. Family management framework adopted by Knafl et al. (2012).](image-url)
are from four dimensions of family management. The items of the Condition Management Ability scale were generated from six family management dimensions (Knafl et al., 2011). It indicates that three scales capture the intention of the FMSF, thus stressing the interplay of the three dimensions.

The FMSF was developed from large empirical studies in the field of nursing and has been refined from a comprehensive review of the literature (Knafl et al., 2012). Also, it has been applied to families with diverse child chronic illnesses such as cancer (Kim & Im, 2015), brain tumors (Deatrick et al., 2006), diabetes (Rearick, Sullivan-Bolyai, Bova, & Knafl, 2011), ADHD (Conlon, Strassel, Vinh, & Trout, 2008), and asthma (Gibson-Young, Turner-Henson, Gerald, Vance, & Lozano, 2014), and the studies have supported the applicability of the framework to various child chronic conditions.

To date, the FMSF has not been explored and applied to the families of children with ASD. However, it should be acknowledged that the construct of FMSF has an overlap with the construct of other models that have been applied in the field of autism such as the Double ABCX Model (McCubbin & Patterson, 1983), the Resiliency Model of Family Stress, Adjustment, and Adaptation (McCubbin & McCubbin, 1993), and stress proliferation (Benson, 2006). Despite the overlap, there are two important differences: First, while the existing model addresses general adaption and coping to stressors in the general population, the FMSF was developed in the context of a child’s chronic condition, which contributes to a more complete understanding of family life for those who have children with ASD (Knafl et al., 2012, 2011). Second, the FMSF is narrower in scope in that it addresses new components that cannot be found in other models. For example, the child’s identity component focuses on parents’ views of normalcy or illness and capabilities or vulnerabilities. As suggested by Estes et al. (2009), additional factors may be at play in the mothers of children with ASD, because the association between the behavior problems and parental stress appears stronger in the mothers of children with developmental disabilities than in the mothers of children with ASD. It is possible to discover additional factors that would affect the psychological well-being of parents by using the FMSF.

In this study, the FMSF was used as a conceptual underpinning to identify which dimensions of family management mediate the relationship between child behavior problems and parent depressive symptoms. Fig. 2 shows our conceptual framework that was adapted by the FMSF. The purpose of the current study was to examine the relationships between child behavior problems and mothers’ depressive symptoms and to determine whether family management mediates this relationship. We hypothesized that (1) child behavior problems would be significantly associated with family management, (2) child behavior problems would significantly predict the mothers’ depressive symptoms, and (3) family management would mediate the relationship between child behavior problems and mothers’ depressive symptoms.

2. Materials and methods

2.1. Participants

The sample for this study included 234 mothers of children with ASD. The mothers’ average age was 37.47 (SD = 7.11), and most were married or involved in a long-term relationship (86.3%). Of the participants, 69.2% identified themselves as Non-Hispanic White, 24% as African-American, and 3.4% as Other. The majority had at least a college degree (84.3%). Half of the mothers were employed either full time or part time (57.7%). The majority of their children were male (81.6%). The average age of the children was 7.14 years (SD = 3.41) and ranged from 2 to 19. Twenty-three percent of the mothers reported that their child had a comorbid chronic health condition such as diabetes, spina bifida, asthma, or a heart condition. Thirty-eight percent said that their child had a comorbid chronic behavior condition such as anxiety, obsessive-compulsive disorder, or

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimensions of Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition of the situation</td>
<td>Child Identity: Parents’ views of the child and the extent to which those views focus on illness or normalcy and capabilities or vulnerabilities. Illness View: Parents’ beliefs about the cause, seriousness, predictability, and course of the illness. Management Mindset: Parents’ views of the ease or difficulty of carrying out the treatment regimen and their ability to manage effectively. Parental Mutuality: Caregivers’ beliefs about the extent to which they have shared or discrepant views of the child, the illness, their parenting philosophy, and their approach to illness management.</td>
</tr>
<tr>
<td>Management behaviors</td>
<td>Parenting Philosophy: Parent’s goals, priorities, and values that guide the overall approach and specific strategies for illness management. Management Approach: Parents’ assessment of the extent to which they have developed a routine and related strategies for managing the illness and incorporating it into family life.</td>
</tr>
<tr>
<td>Perceived consequences</td>
<td>Family Focus: Parents’ assessment of the balance between illness management and other aspects of family life. Future Expectation: Parents’ assessment of the implications of the illness for their child’s and family’s future.</td>
</tr>
</tbody>
</table>

Adopted by Knafl and Deatrick (2003).
ADHD (see Table 2). Almost half of the mothers in this study scored at and above the clinical range of depressive symptoms (45.7%) (Cheng & Chan, 2005).

### 2.2. Procedures

We distributed a cross-sectional survey throughout a Southeastern state to learn about parents’ perceptions of their child with ASD, their views about ASD treatments, and their experiences as a family. We recruited parents in two ways. First, mail and electronic surveys were distributed in ASD clinics and through ASD support organizations. Second, paper surveys were mailed to current and past recipients of a publicly funded early intensive behavioral intervention (EIBI) program. Parents were included in the study if (1) they were parenting a child with ASD in their home and if (2) their child was receiving

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N (%)</th>
<th>M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mothers</td>
<td>N (%)</td>
<td>M (SD)</td>
</tr>
<tr>
<td>Age</td>
<td>37.47 (7.11)</td>
<td></td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>24 (10.3)</td>
<td></td>
</tr>
<tr>
<td>Married/Long Term Rel.</td>
<td>202 (86.3)</td>
<td></td>
</tr>
<tr>
<td>Married, but separated from spouse</td>
<td>8 (3.4)</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian or White</td>
<td>162 (69.2)</td>
<td></td>
</tr>
<tr>
<td>African-American</td>
<td>57 (24.4)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>14 (6.0)</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some High School</td>
<td>38 (16.2)</td>
<td></td>
</tr>
<tr>
<td>Some college</td>
<td>86 (36.8)</td>
<td></td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>67 (28.6)</td>
<td></td>
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<tr>
<td>Advanced degree</td>
<td>42 (18.0)</td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>135 (57.7)</td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>98 (41.9)</td>
<td></td>
</tr>
<tr>
<td>Child</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>7.14 (3.41)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>191 (81.6)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>43 (18.4)</td>
<td></td>
</tr>
<tr>
<td>Comorbid chronic health condition</td>
<td>59 (23.9)</td>
<td></td>
</tr>
<tr>
<td>Comorbid behavioral condition</td>
<td>88 (37.6)</td>
<td></td>
</tr>
</tbody>
</table>

Fig. 2. Conceptual framework adopted by family management style framework.
treatment for his or her ASD symptoms or related behavior problems. The latter criterion was used because an aim of the research study was to examine ASD-related treatment adherence. The survey packet included a consent letter, demographic questionnaire, standardized scales, and open-ended questions. Participants either returned the survey using the included business reply envelopes or completed the survey via an online link provided in the packet. While we are unable to determine the response rate among parents who were recruited through community organizations, recruitment through the statewide EIBI program yielded a 16.1% response rate. The child’s ASD diagnosis was determined by the parent’s report. The investigators’ institutional review board (IRB) approved all study procedures.

2.3. Instruments

2.3.1. Depressive symptoms

Depressive symptoms were assessed using the Center for Epidemiological Studies Depression Scale (CES-D)-Boston short form. This scale is comprised of 10 self-report, dichotomous items (e.g., “I felt depressed”). The CES-D was reported to be a reliable and valid measure for depressive symptoms in the general population (Kohout, Berkman, Evans, & Cornoni-Huntley, 1993). We computed the total score as the sum of the scores. A higher score indicates higher levels of depressive symptoms. Cronbach’s alpha for the CES-D-Boston short form in this study was 0.85.

2.3.2. Child behavior problems

Child behavior problems were measured by using ad-hoc questions developed by the research team. Parents were asked to rate the severity of the behavior problems on a scale ranging from 0 (none) to 4 (severe). The severity of related behavior problems (Cronbach’s alpha = 0.752) was computed as the sum of the following five items: (1) Aggression toward others, (2) self-injury, (3) anxious behaviors, (4) regulatory problems (i.e., sleeping, feeding), and (5) noncompliance (i.e., refuses to do as told). These behaviors are among the most commonly reported challenging behaviors in the literature, and have been consistently associated with parental well-being (e.g., Lecavalier, Leone, & Wiltz, 2006). Additionally, they are included in well-validated instruments such as the Eyberg Child Behavior Inventory (ECBI: Boggs, Eyberg, & Reynolds, 1990), the Pervasive Developmental Disorder Behavior Inventory (PDD-BI: Cohen & Sudhalter, 2005), and the Nisonger Child Behavior Rating Form (NCBRF: Aman, Tasse, Rojahn & Hammer, 1996). In order to assess the construct validity of the scale, we examined its correlation with parent-reported comorbid behavioral conditions. ANOVA results indicate that the behavior problems scale score and the presence of a comorbid behavioral condition are significantly associated (p = 0.000).

2.3.3. Family management

The Family Management Measurement (FaMM) was used to measure family management. There are six subscales, but we excluded the Parental Mutuality subscale because it is for partnered parents only. The FaMM five subscales contain 45 items with response options ranging from 1 (strongly disagree) to 5 (strongly agree). Child’s Daily Life (5 items) addresses the parents’ perceptions of the child and his or her everyday life (e.g., Our child’s everyday life is similar to that of other children his/her age; Our child enjoys life less because of the condition). Condition Management Ability (12 items) measures the parents’ perceptions of the manageability of the child’s condition (e.g., We have some definite ideas about how to help our child live with the condition; We have not been able to develop a routine for taking care of our child’s condition). Condition Management Effort (4 items) addresses the work and the time needed to manage the child’s condition (e.g., Our child’s condition requires frequent visits to the clinic; Our child’s condition does not take a great deal of time to manage). Family Life Difficulty (14 items) measures the parents’ perceptions about the extent to which having a child with a chronic condition makes family life difficult (e.g., Our child’s condition gets in the way of family relationships; Our child’s condition rarely interferes with other family activities). Lastly, the View of Condition Impact subscale (10 items) addresses parents’ perceptions of the seriousness of the child’s condition and the extent to which it impacts the child’s and the family’s future (e.g., Our child’s condition is the most important thing in our family; We think about our child’s condition all the time) (Knafl et al., 2011).

Lower scores on two of the scales (Child’s Daily Life and Condition Management Ability) represent greater difficulty in managing the child’s condition, and lower scores on the other three scales (Condition Management Effort, Family Life Difficulty, and View of Condition Impact) indicate greater ease in managing the condition. Taken together, the five subscales measure the key aspects of managing the child’s chronic condition. Cronbach’s alpha for the original FaMM scale and those in this study ranged from 0.72 to 0.91 and 0.64 to 0.91, respectively. It was reported that FaMM was a reliable and valid measure (Knafl et al., 2011).

2.4. Data analysis

In order to test our hypotheses we used a parallel multiple mediator model (Hayes, 2013; p. 125). Our hypothesized model, shown in Fig. 3, consisted of the effect of an independent variable (child behavior problems) on a dependent variable (depressive symptoms) transmitted by multiple mediators (Child Daily Life, Condition Management Effort, Condition Management Ability, Family Life Difficulty, and View of Condition Impact). “This model allows for a simultaneous test of each mediator while accounting for the associations between each mediator” (Hayes, 2013; p. 131). The analysis was conducted
using the PROCESS macro in SPSS 22 (Hayes, 2013) with a specification of 10,000 bootstraps to generate 95% confidence intervals. Bootstrapped confidence intervals make no assumption about the shape of the distribution.

3. Results

3.1. Covariate analyses and descriptive statistics

Descriptive statistics for all variables of interest are reported in Table 3. Correlations showed that the study variables were moderately related to one another (see Table 4). Items were evaluated for multicollinearity using the correlation values and the variance inflation index (VIF). There was no evidence of multicollinearity between variables in this study.

To determine whether demographic variables needed to be included as covariates in analyses, we first examined relationships between demographic characteristics of parents and their children, including parent age, relationship status, race, employment status, education, child age, child gender, child comorbid chronic health condition, and child comorbid chronic behavior condition, and the dependent variables (FaMM scales and CESD). Correlations were computed for continuous demographic variables, and analysis of variance (ANOVA) was used for categorical demographic variables. See Table 5 for results of covariate analyses. Older parents reported increased family life difficulty. Parents of older children

| Table 3 |
|------------------|------------------|------------------|
| **Predictor**    | **Mean** | **SD** | **Minimum** | **Maximum** |
| Child Behavior Problems | 13.74 | 3.81 | 6.00 | 24.00 |
| **Mediators**    | **Mean** | **SD** | **Minimum** | **Maximum** |
| Child Daily Life | 13.05 | 3.72 | 5.00 | 25.00 |
| Condition Management Effort | 14.68 | 3.47 | 4.00 | 20.00 |
| Condition Management Ability | 40.38 | 6.98 | 20.00 | 57.00 |
| Family Life Difficulty | 42.18 | 11.75 | 14.00 | 66.00 |
| View of Condition Impact | 28.95 | 5.36 | 12.00 | 41.00 |
| **Outcome**      | **Mean** | **SD** | **Minimum** | **Maximum** |
| Depressive Symptoms | 3.36 | 2.93 | 0.00 | 10.00 |

*Fig. 3. Hypothesized multiple mediator model.*
reported lower condition management ability and a negative view of condition impact. White and African American parents reported lower scores on child daily life compared to parents who identified as Other. African American parents reported a more negative view of the condition impact and increased depressive symptoms compared to White parents and parents who identified as Other. Parents without a high school degree reported the lowest condition management effort scores. Parents with a high school diploma reported more negative views of the condition impact compared to parents with some college, a bachelor’s degree, or a master’s degree. Employed parents reported more positive views of child daily life, family life difficulty, and condition impact, as well as lower depressive symptoms, compared to unemployed parents. Parents of girls reported more difficulty managing their child’s condition and had a more negative view of the condition’s impact. Parents of children with a comorbid chronic health condition reported increased condition management effort, greater family life difficulty, a negative view of condition impact, and elevated depressive symptoms. Finally, parents of children with a comorbid chronic behavior condition reported more difficulty managing their child’s condition, a more negative view of the condition’s impact, and increased depressive symptoms. Therefore, in our mediation analyses we included parent age, parent race, parent education, parent employment status, child age, child gender, child comorbid chronic health condition, and child comorbid chronic behavior condition as covariates. The covariates were entered as predictors of each mediator as well as predictors of maternal depressive symptoms.

Table 4
Correlations between study variables.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Child Behavior Problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Child Daily Life</td>
<td>−0.44***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Condition Management Effort</td>
<td>0.52***</td>
<td>−0.51***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Condition Management Ability</td>
<td>−0.32***</td>
<td>0.49***</td>
<td>−0.36***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Family Life Difficulty</td>
<td>0.52***</td>
<td>−0.69***</td>
<td>0.65***</td>
<td>−0.59***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. View of Condition Impact</td>
<td>0.47***</td>
<td>−0.51***</td>
<td>0.53***</td>
<td>−0.58***</td>
<td>0.59***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Depressive Symptoms</td>
<td>0.35***</td>
<td>−0.33***</td>
<td>0.37***</td>
<td>−0.33***</td>
<td>0.51***</td>
<td>0.32***</td>
<td></td>
</tr>
</tbody>
</table>

*** p < 0.001.

Table 5
Results of covariate analyses.

<table>
<thead>
<tr>
<th>Continuous Covariates</th>
<th>Child Daily Life</th>
<th>Condition Management Effort</th>
<th>Condition Management Ability</th>
<th>Family Life Difficulty</th>
<th>View of Condition Impact</th>
<th>Depressive Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mothers Age</td>
<td>−0.04</td>
<td>0.01</td>
<td>−0.08</td>
<td>0.14</td>
<td>0.09</td>
<td>−0.02</td>
</tr>
<tr>
<td>Child Age</td>
<td>−0.10</td>
<td>−0.01</td>
<td>−0.16†</td>
<td>0.12</td>
<td>0.18†</td>
<td>0.08</td>
</tr>
</tbody>
</table>

Categorical Covariates | Child Daily Life | Condition Management Effort | Condition Management Ability | Family Life Difficulty | View of Condition Impact | Depressive Symptoms |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mothers Marital Status</td>
<td>0.62</td>
<td>0.34</td>
<td>0.68</td>
<td>0.35</td>
<td>2.64</td>
<td>1.22</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>4.46</td>
<td>2.80</td>
<td>0.71</td>
<td>1.88</td>
<td>3.70†</td>
<td>3.84†</td>
</tr>
<tr>
<td>Education</td>
<td>0.93</td>
<td>2.14†</td>
<td>0.86</td>
<td>1.43</td>
<td>2.63†</td>
<td>1.72</td>
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<tr>
<td>Employment</td>
<td>4.03†</td>
<td>1.92</td>
<td>1.52</td>
<td>4.67†</td>
<td>9.03†</td>
<td>9.74†</td>
</tr>
<tr>
<td>Child Gender</td>
<td>0.98</td>
<td>0.42</td>
<td>13.22***</td>
<td>3.74</td>
<td>5.56†</td>
<td>0.59</td>
</tr>
<tr>
<td>Comorbid chronic health condition</td>
<td>3.01</td>
<td>16.03***</td>
<td>3.48</td>
<td>7.13*</td>
<td>11.73*</td>
<td>7.70*</td>
</tr>
<tr>
<td>Comorbid behavioral condition</td>
<td>2.96</td>
<td>3.87</td>
<td>5.96*</td>
<td>3.01</td>
<td>8.88*</td>
<td>4.71*</td>
</tr>
</tbody>
</table>

† p < 0.05.
‡ p < 0.01.
*** p < 0.001.
3.2. Multiple mediator model results

The final model, which contains only significant effects is shown in Fig. 4, and the estimates for each path of our hypothesized multiple mediator model are presented in Table 6. As shown in Table 5, child behavior problems were a significant predictor of each subscale of the FaMM. However, only Family Life Difficulty was a significant predictor of parent depressive symptoms, suggesting that Family Life Difficulty was the only mediator of the association between child behavior problems and parent depressive symptoms. After accounting for the mediators, the direct effect between child behavior problems and parent depressive symptoms was non-significant, \( \hat{c}^\prime = 0.00 \) (SE = 0.06), \( t = 0.08, p = 0.94, 95\% \text{ CI} = -0.11, 0.12 \).

Examination of the specific indirect effects confirms the conclusion that only Family Life Difficulty mediated the association between child behavior problems and parent depressive symptoms, coefficient = 0.23 (Bootstrap SE = 0.05), Bootstrap 95% CI = 0.14, 0.35. The bootstrapped confidence intervals contained zero for the remaining mediators.

### Table 6

Results of parallel multiple mediator model.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Child Daily Life Coef (SE)</th>
<th>Management Effort Coef (SE)</th>
<th>Management Ability Coef (SE)</th>
<th>Family Life Difficulty Coef (SE)</th>
<th>Condition Impact Coef (SE)</th>
<th>Depressive Symptoms Coef (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior Problems</td>
<td>-0.46(0.06)**</td>
<td>0.49(0.05)**</td>
<td>-0.53(0.13)**</td>
<td>1.71(0.19)**</td>
<td>0.58(0.09)**</td>
<td>0.00(0.06)</td>
</tr>
<tr>
<td>Child Daily Life</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.07(0.06)</td>
</tr>
<tr>
<td>Management Effort</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.09(0.07)</td>
</tr>
<tr>
<td>Management Ability</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.03(0.03)</td>
</tr>
<tr>
<td>Family Life Difficulty</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.13(0.02)**</td>
</tr>
<tr>
<td>Condition Impact</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.05(0.05)</td>
</tr>
<tr>
<td>Constant</td>
<td>23.23 (2.50)**</td>
<td>7.84(2.08)**</td>
<td>54.61(5.00)**</td>
<td>1.02(7.27)</td>
<td>22.09(3.46)**</td>
<td>4.05(3.20)</td>
</tr>
<tr>
<td>( R^2 = 0.24 )</td>
<td>( R^2 = 0.37 )</td>
<td>( R^2 = 0.15 )</td>
<td>( R^2 = 0.35 )</td>
<td>( R^2 = 0.29 )</td>
<td>( R^2 = 0.37 )</td>
<td></td>
</tr>
<tr>
<td>( F(9,205) = 13.29 )**</td>
<td>( F(9,205) = 4.15 )**</td>
<td>( F(9,205) = 12.20 )**</td>
<td>( F(9,205) = 9.25 )**</td>
<td>( F(9,205) = 8.39 )**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** \( p < 0.001 \).
4. Discussion

Research has consistently found that challenging child behaviors associated with ASD can negatively impact maternal mental health (Davis & Carter, 2008; Falk et al., 2014; Firth & Dryer, 2013). Less work has been done to examine potential mediators of this relationship. In the current study, we examined the relationship between child behavior problems and mothers’ depressive symptoms, and we investigated whether family management mediates this relationship. To our knowledge, this is the first application of the FMSF model to families of children with ASD. The results shed light on the potential role that family management plays in parents’ mental health.

The means of each FaMM subscale gained from this study were compared with the means provided in the studies of childhood chronic conditions. The mothers of children with ASD in this study appeared to perceive greater difficulty in managing their child’s condition across the five FaMM scales than the parents of the childhood cancer survivors (Kim & Im, 2015). The means of Child’s Daily Life, Condition Ability, Condition Effort, Life Difficulty, and Condition Impact were 18.31, 47.0, 10.01, 34.60, and 26.79, respectively. For the parents of children with Type 1 diabetes (Rearick et al., 2011), the means of Child’s Daily Life, Condition Ability, Condition Effort, Life Difficulty, and Condition Impact were 18.73, 50.55, 13.82, 28.27, and 25.55, respectively. The study of the parents of children with asthma (Gibson-Young et al., 2014) examined two scales (mean of Condition Ability: 32.4 and Condition Effort: 13.0). In other words, the mothers of children with ASD tended to perceive daily life as less normal for their children with ASD, have less confidence in managing their child’s needs, expend more effort to manage their children with ASD, experience more difficulty in managing their child’s condition, and have greater concerns about their child’s and their family’s future. We are unable to generalize from this simple comparison whether the parents of children with ASD experienced higher difficulty in managing than the parents of children with other types of chronic conditions, but the comparison emphasizes that the mothers of children with ASD face ongoing challenges in managing their children with ASD.

It is important to note that child behavior problems were associated with all five domains of family management for mothers of children with ASD. When the severity of the child behavior problems was high, the following were also reported:

- The mothers perceived their child’s daily life as less normal
- Their confidence in managing their child’s condition was low
- Family managing required much work and time
- The child with ASD made their family life difficult
- Their child’s condition was severe and its implication to the family’s future was negative.

These findings are consistent with previous research indicating that child behavior problems are a strong predictor of difficulties in family management, poor psychological well-being, and inadequate family functioning (Barker et al., 2011; Sikora et al., 2013).

In a parallel multiple mediator model, which is used to examine each FaMM subscale as mediators between the child behavior problems and the mothers’ depressive symptoms, only Family Life Difficulty was found to mediate this relationship. In other words, as the severity of child behavior problems increased, the mothers of children with ASD perceived more difficulties in managing their children with ASD, which in turn increased the levels of the mothers’ depressive symptoms. The results may reflect that their children’s behavior problems interfere with overall family life; their negative perceptions of how they are dealing with the children’s condition of ASD may lead to maternal depression. Previous research found that a child’s externalizing behavior problems had significant associations with family function such as negative feelings of parenting, social relationships, and impact on marriage (Sikora et al., 2013).

The four other FaMM scales did not have a mediating effect. This suggests that the four subscales (i.e., mothers’ perception of less normal life, less management of child’s condition, more efforts in managing child’s condition, and more concern about child’s condition) may have less of an impact on mothers’ mental health than mothers’ perception of increased difficulty in dealing with a child’s condition; future research in this area is needed. A possible explanation can be that the four subscales may be much stronger mediators between sociocultural factors and mental health. The finding also suggests that other factors not measured in this study may be influencing the relationship between child behavior problems and maternal depression. The FMSF focuses on internal family processes, beliefs, and behaviors as families incorporate condition management into everyday life. However, these processes are inextricably linked to the family’s social environment; and factors such as the availability of services, interactions with professionals, and informal supports from family and friends have been found to influence both parent depression and family management ability (Knafi et al., 2012; Falk et al., 2014).

Family Life Difficulty assesses parent perceptions of the extent to which their child with ASD influences family relationships and routines. This suggests a need for family-centered services that assist the family in maintaining or adapting their routines. Services such as respite care, family psychoeducation, and assistance with day-to-day problem-solving may be particularly effective (Harper, Dyches, Harper, Roper, & South, 2013). These types of services can often be overlooked as professionals focus on addressing the medical and behavioral needs of the child. Yet they may be critical to ensuring that the long-term needs of the family and the child are met. One strategy that has been found effective is to incorporate informal support networks, such as parent-to-parent mentoring relationships, in the service team (Shilling, Bailey, Logan, & Morris, 2015).
The study has several limitations in the sample and method that should be considered when interpreting the findings. First, the study did not include the fathers of children with ASD. The FMSF focuses on all of the family members rather than on one individual family member. It is possible that there are discrepancies among the family members with regards to aspects of family management. Second, a validated ASD diagnostic rating instrument was not used with our research participants even though our inclusion criteria included parenting children with ASD, which increases the likelihood to include parents who raise children with other types of disabilities. Third, we used an ad-hoc scale to measure the child’s behavior problems, but validity and reliability of the scale are questionable, because we did not use many resources to enhance its reliability and validity. Fourth, this data is cross-sectional, which prevents us from interpreting the causal direction of the variables. Longitudinal research is needed to clarify the relationships among the behavior problems, family management, and the depressive symptoms. It is possible that poorer family management leads to increased child behavior problems (Totsika et al., 2013; Zaidman-Zait et al., 2014). Fifth, as all the variables were reported by the mothers, mono-method bias could be a problem. For example, the same attitudes that influence the mothers’ perceptions of Family Life Difficulty may influence their reports about their child’s behavior problems. Finally, because the FaMM scale has not previously been used to research the mothers of children with ASD, it is possible that the mothers of children with ASD interpret the items differently.

5. Conclusion

To our knowledge, this is the first study to examine family management among mothers of children with ASD. We found that only Family Life Difficulties mediated the positive association between child behavior problems and the mothers’ depressive symptoms when other factors were controlled. Future studies need to examine why Family Life Difficulties is such a salient variable that impacts mothers’ depressive symptoms. Service providers should recognize that mothers’ perceptions of the impact of their child’s ASD on family life are related to the mothers’ psychological well-being. This finding also suggests that interventions addressing family life difficulty could mitigate the negative effects of the child’s challenging behaviors on the parents’ mental health. The FaMM scale may be a helpful tool for assessing families’ needs specific to managing their child’s ASD and associated behavioral challenges. Further research is required to explore the utility of the Family Management Style Framework for parents of children with ASD. First, identifying family management style among parents of children with ASD will provide additional understanding about the outcomes of parents’ psychological well-being. In addition, the FMSF focuses not only on the internal family management process but also on contextual factors influencing family management. Because a family’s social network, access to resources, and interchanges with health-care and school professionals and systems are suggested as significant contextual factors that affect family management, the relationships between contextual factors and dimensions of family management among parents of children with ASD should be examined.

References


Deatrick, J., Thibodeaux, A., Mooney, K., Schmus, C., Pollack, R., & Davey, B. (2006). Family management style framework: a new tool with potential to assess family needs specific to managing their child’s ASD and associated behavioral challenges. Further research is required to explore the utility of the Family Management Style Framework for parents of children with ASD. First, identifying family management style among parents of children with ASD will provide additional understanding about the outcomes of parents’ psychological well-being. In addition, the FMSF focuses not only on the internal family management process but also on contextual factors influencing family management. Because a family’s social network, access to resources, and interchanges with health-care and school professionals and systems are suggested as significant contextual factors that affect family management, the relationships between contextual factors and dimensions of family management among parents of children with ASD should be examined.

References


