

2017

Severity of illness, parenting, and child psychological adjustment : exploring the associations among mothers with multiple sclerosis

Emily Elizabeth Padgett

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ABSTRACT

SEVERITY OF ILLNESS, PARENTING, AND CHILD PSYCHOLOGICAL ADJUSTMENT: EXPLORING THE ASSOCIATIONS AMONG MOTHERS WITH MULTIPLE SCLEROSIS

Emily Elizabeth Padgett, M.A.
Department of Psychology
Northern Illinois University, 2017
Laura D. Pittman, Director

Multiple sclerosis (MS) is a pervasive chronic illness, and approximately 2.3 million individuals worldwide are diagnosed with MS. Those with MS are often women of childbearing age and, thus, understanding how the disorder impacts these mothers and their families is important. The current study examined potential mechanisms through which maternal MS symptom severity influences child psychological functioning (i.e., internalizing and externalizing symptoms). Complete data were collected from 75 mothers diagnosed with MS via online data collection methods. Results indicated some support for previous research in that MS symptom severity was associated with poorer psychological functioning in children. Furthermore, there was an indirect association of maternal MS severity on child internalizing symptoms through maternal lax control. Furthermore, there was an indirect association of maternal MS severity on child externalizing symptoms through maternal depressive symptoms and maternal acceptance. Limitations, clinical implications, and future directions are discussed.

NORTHERN ILLINOIS UNIVERSITY
DEKALB, ILLINOIS

AUGUST 2017

SEVERITY OF ILLNESS, PARENTING, AND CHILD PSYCHOLOGICAL
ADJUSTMENT: EXPLORING THE ASSOCIATIONS
AMONG MOTHERS WITH
MULTIPLE SCLEROSIS

BY

EMILY ELIZABETH PADGETT
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A THESIS SUBMITTED TO THE GRADUATE SCHOOL
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE
MASTER OF ARTS

DEPARTMENT OF PSYCHOLOGY

Thesis Director:
Laura D. Pittman

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CHAPTER 1

INTRODUCTION

Concerns about how having a mother with multiple sclerosis (MS) may influence children's psychological functioning have been raised in the literature. MS is an unpredictable and often disabling, chronic disease of the central nervous system. The disease is characterized by a disruption in the flow of information between the brain and body, as well as within the brain. This disruption of information is caused by damage to the protective cover (i.e., myelin sheath) of the neurons in the brain and the spinal cord. MS is typically diagnosed between the ages of 20 and 50 and occurs more frequently in women than men at a ratio of 2:1 (National Multiple Sclerosis Foundation, 2013). It is estimated that approximately 2.3 million individuals worldwide are diagnosed with MS (National Multiple Sclerosis Foundation, 2013), indicating that it is a relatively prevalent problem among adults. Symptoms of MS include fatigue, vision deficits (i.e., double vision and loss of vision), problems with balance, pain, numbness, bladder and bowel symptoms, problems with walking, speech impairments, and sexual difficulties. Clinically, MS is a heterogeneous disease, with symptom presentation varying greatly across individuals. However, regardless of symptom presentation, a diagnosis of MS is synonymous with a diagnosis of a chronic illness (CI). Eighty to ninety percent of patients present with periods of acute episodic symptoms followed by periods of remission, while 10-20% experience a steady progression of

symptom severity following the onset of the diagnosis (Myhr, 2008). Though the majority of diagnoses are associated with periods of remission, only 1 in 5 individuals diagnosed with MS will maintain stable symptoms or avoid disability throughout their lifetime (Mitchell, Benito-Leon, Gonzalez, & Rivera-Navarro, 2005).

Though MS is primarily thought of as being synonymous with physical disabilities, it has also been associated with cognitive and psychological deficits (Brassington & Marsh, 1998). Specifically, MS has been associated with depression, anxiety, anger, and irritability (Chwastiak et al., 2002; Feinstein, 2004). These psychological deficits, as well as the variability seen in symptom presentation and disease trajectory, are necessary components to consider when determining an individual's overall level of functioning.

Given that a diagnosis of MS is associated with physical, cognitive, and psychological deficits, in addition to the fact that MS is most often diagnosed during the age when individuals become parents, it seems warranted that MS could have a profound impact on the psychological functioning of the offspring of parents diagnosed with MS (for a review examining how MS impacts family members, see Vccelli, 2014). Indeed, research has suggested that parents with a chronic illness are often concerned about how their illness will negatively affect their children (De Judicibus & McCabe, 2004). In order to expand the current knowledge base surrounding MS and its impact on those diagnosed and their families, the current study has three primary goals. The first goal is to explore the relationship between maternal MS and child functioning. The second goal is to examine the role parenting and maternal depression play in the relationship between maternal MS and child maladjustment. The third goal is more exploratory in nature in that the current study aims to examine how the

gender of the child may impact the strength of the association between MS, parenting, and children's psychological outcomes.

Parental CI, MS, and Offspring Outcomes

MS is one of many chronic illnesses that mothers may experience when they are parenting. Since the literature focused on MS is limited, the research on mothers with chronic illnesses is reviewed first. Chronic illness encompasses a number of different conditions including MS, cancer, diabetes, and chronic pain. Chronic illness is not a temporary state, but rather, it is more appropriately described as a way of living that is often plagued by daily lifestyle disruptions. For example, an individual diagnosed with MS who has recently been confined to a wheelchair will have to make difficult lifestyle choices in a way that is different than those without mobility limitations. Specifically, an individual with mobility concerns would need to exert considerably more effort in planning and maneuvering daily tasks. Thus, chronic illnesses may interfere with an individual's functioning such that it makes it more difficult for individuals diagnosed with a CI to engage in and complete tasks associated with parenting. Additionally, this disruption in their ability to complete parenting-related tasks is likely to influence their children's functioning.

The research literature suggests that a parental diagnosis of CI is associated with poorer psychological functioning in their offspring (e.g., Bogosian, Moss-Morris, & Hadwin, 2010; Evans, Keenan, & Shipton, 2007; Pedersen & Revenson, 2005). Specifically, parental CI has been found to be associated with poorer behavioral, psychological, and academic

functioning in children (e.g., Anderson & Hammen, 1993) and adolescents (e.g., Sieh, Visser-Meily, & Meijer, 2013). Further, compared to adolescents of families with healthy parents, those with parents experiencing CI exhibited increased internalizing problems (i.e., anxiety, depression, and somatic problems) in addition to earning a lower grade point average (Sieh et al., 2013). In a longitudinal study examining the impact of parental illness on children in Taiwan, parental CI was associated with poorer psychosocial adjustment, an increased amount of behavioral problems, and poorer adaptive skills (Chen, 2014). Interestingly, parental CI was also associated with increased behavioral problems and poorer adaptive skills two years later (Chen, 2014). A review of current literature found that children who have a parent with a CI experience higher levels of internalizing symptoms (i.e., anxiety and depression; Romer, Barkmann, Schulte-Markwort, Thomalla, & Riedesser, 2002). Further, a meta-analysis found significant overall effect sizes for both internalizing (Cohen's $d = .23$) and externalizing ($d = .09$) problem behaviors in children experiencing parental CI (Sieh, Meijer, Oort, Visser-Meily, & Van der Leij, 2010).

Moreover, maternal chronic pain, often a symptom of both CI and MS, is associated with a number of negative outcomes for children (Kaasboll, Lydersen, & Indredavik, 2012). For example, a recent review found that children and adolescents with parents experiencing chronic pain were at an increased risk for experiencing both internalizing and externalizing symptoms in addition to somatic pain complaints similar to those of their parents (Umberger, 2014). More specifically, using mother, father, and teacher reports, Evans and colleagues (2007) compared children of mothers experiencing chronic pain to a comparable group of children with pain-free mothers. Results indicated that children of mothers experiencing

chronic pain demonstrated more impaired social skills in school, more internalizing and externalizing behaviors, and more social and health problems. In another study comparing the physical and psychological functioning of children with mothers experiencing chronic pain, fathers with chronic pain, and pain-free controls, researchers found that children of mothers and fathers experiencing chronic pain fared worse than controls in terms of psychological functioning (Evans & Keenan, 2007). Specifically, children of mothers experiencing chronic pain reported greater anxiety, health problems, and sickness behavior (e.g., frequency and location of pain and frequency of visits to the school nurse) compared to children of fathers experiencing chronic pain and controls, while children of fathers experiencing chronic pain experienced more externalizing behaviors compared to children of mothers with chronic pain and controls. Of note, these researchers highlighted the fact that differences in externalizing behaviors between children of different-gender parents are not due to gender differences in externalizing behaviors (i.e., boys do not inherently exhibit more externalizing behaviors), as their measure of these behaviors accounted for these differences. Not only does this highlight an association between parental CI and child psychological functioning, but it also suggests that symptoms vary by gender of the parent diagnosed with a CI.

While the literature focused on parental MS is more limited, there is both qualitative and quantitative data to suggest that there is a relationship between parental MS and negative psychological and psychosocial functioning in children. For example, in a qualitative study looking at how adolescents adjust to having a parent with MS, a number of negative themes were identified (Bogosian, Moss-Morris, Bishop, & Hadwin, 2011). Specifically, adolescents indicated that they experienced family tension, had less time for interacting with their friends,

and often worried about their parent's future. Additionally, adolescents reported that their emotional state was often impacted by the negative emotional state of their parent with MS. These adolescents also reported having more responsibilities (e.g., chores, caring for their parent with MS) compared to their peers. Their increased responsibilities often overwhelmed adolescents, and they described themselves as being different from their peers, suggesting they may have problems relating to same-age peers (Bogosian et al., 2011). Similar relationships were found in another qualitative study. Specifically, interviews with children, age 7 to 14 years, indicated that having a parent with MS impacted them emotionally, leading to feelings of anxiety and resentment (Turpin, Leech, & Hackenberg, 2008). This anxiety was either directed toward the health of their parents or concern for their own future as a result of their increased responsibilities in the home. Additionally, feelings of resentment were often a result of having an increased number of responsibilities and were accompanied by feelings of guilt (Turpin et al., 2008). Thus, having a parent with MS has been shown to result in a number of conflicting emotions that may influence child psychological functioning. Specifically, having more responsibilities and demands as a result of parental MS may lead to increased emotional difficulties as a result of conflicting feelings of guilt and resentment directed toward a parent.

Similar to qualitative research, quantitative research has suggested that having a parent with MS is associated with poorer psychological functioning in both children and adolescents. In one study using data from 174 families with a child between the ages of 7 and 17 and a parent with MS, 26% of the children were classified by their parents as being at risk for developing mental health problems (i.e., internalizing and externalizing behaviors; Brandt &

Weinert, 1998). Further, the children who were not considered at risk for developing mental health problems in this sample tended to live in families that were more adaptable, had higher income, and had higher levels of marital agreement and satisfaction (Brandt & Weinert, 1998). In another study examining children's and adolescents' reports of their own adjustment, 48 families with a parent with MS were compared to 145 families with a parent reporting no disability (Pakenham & Bursnall, 2005). Results indicated that higher family responsibilities were positively associated with symptoms of depression, compared with children of healthy parents; children with a parent with MS reported higher somatization and lower positive affect and life satisfaction (Pakenham & Bursnall, 2005). Thus, a multitude of factors present in the context of parental MS may be contributing to children's negative adjustment.

Further, child and parental reports of symptoms have also converged to demonstrate similar patterns of poorer psychological functioning. More specifically, 144 families of individuals diagnosed with MS were examined (Steck et al., 2007). Broadly, results indicated children rated themselves as having significantly elevated internalizing symptoms (i.e., depression and anxiety), while ill parents also rated their children as having increased internalizing symptoms (Steck et al., 2007). Overall, research supports that children with a parent diagnosed with MS have poorer psychological adjustment than those without a parent with MS.

In addition to a number of specific studies examining the impact of parental MS on child functioning, Bogosian and colleagues (2010) systematically reviewed the impact of parental MS on children and found clear evidence that it negatively impacts children's social

and family relationships (Bogosian et al., 2010). Of note, increased illness severity was negatively associated with child adjustment (Bogosian et al., 2010), and other research exists that suggests that more severe presentations of parental MS are associated with more severe psychological outcomes in their children (Horner, 2012). Thus, research, though limited, has established that there is an association between parental MS and poor psychological functioning in offspring, and the magnitude of this association may depend on parents' illness severity.

Research has also supported that the impact parental MS has on children is more complex than a direct association between parental MS and child outcomes. For example, researchers examined children's emotions, concentration, behavior, and social interactions in a study of 31 parents diagnosed with MS and their 48 children, age 4- to 16-years old (De Judicibus & McCabe, 2004). Results indicated that children of a parent with MS were at a three times greater risk of developing psychological problems than the general population (De Judicibus & McCabe, 2004). However, researchers found that parent-reported child symptoms depended on other parent factors such as parental negative affect, confusion, tension, fatigue, depression, relationship satisfaction, and lower family income (De Judicibus & McCabe, 2004). Additionally, many other factors have been demonstrated to negatively impact child adjustment within the context of parental MS such as family dysfunction, negative parental emotions, lack of knowledge about their illness, and low levels of social support (Bogosian et al., 2010). Thus, other factors may play a role in the link between parental MS and child psychological functioning.

While the literature usually suggests an established association between both parental CI and parental MS and offspring maladjustment, a number of studies have not found a difference between children of mothers experiencing CI and controls. Further, some studies indicate that the symptoms experienced by these children lie in the subclinical range (e.g., Annunziato, Rakotomihamina, & Rubacka, 2007; Houck, Rodrigue, & Lobato, 2007; Pakenham & Cox, 2014). For example, one study examining 812 single mothers with and without CI focusing on the psychological and behavioral functioning of their children found that there were no differences between children of parents with and without CI on well-being (Annunziato et al., 2007). More specific to MS, another study compared 126 youth of a parent with MS and youth with parents without MS, and results indicated that there was no difference between the groups in terms of behavioral and emotional outcomes (Pakenham & Cox, 2014). Another study examining the psychological functioning of adolescents with a parent with a CI indicated that the psychological functioning of adolescents with parents with a CI was in subclinical ranges (Houck et al., 2007). Thus, these differences in findings in the CI literature may speak to methodological differences across studies or it may suggest the presence of moderating variables that may be affecting the strength or direction of the relationship between parental CI and offspring outcomes.

The Moderating Role of Child Gender

In fact, the level of child maladjustment associated with parental CI may depend upon the gender of the child. Much of the general research surrounding the influence of parental CI

on child psychological functioning has examined the impact child gender has on outcomes. Specifically, a review of the current literature found increased internalizing symptoms in children of a parent with a CI, where daughters of mothers experiencing CI displayed greater maladjustment than sons (Romer et al., 2002). Thus, findings from the CI literature highlight the importance of gender. As such, the gender of the child may play a role in the strength of the association between parental CI and child maladjustment. While the gender of the parent diagnosed with a CI has also been implicated (e.g., Evans & Keenan, 2007), this study will focus on mothers, given the greater prevalence of MS among women.

As seen in the CI literature, the gender of the child of a parent with a CI has also been implicated in the associations found related to parental MS, although child outcomes have not specifically been considered. Unlike in the review by Romer and colleagues (2002), daughters tend to cope with parental MS better than sons (Steck, Amsler, Kappos, & Burgin, 2001). More specifically, male adolescents were found to be more likely to deny wanting to know about the consequences of MS and to avoid emotionally involving themselves in their parent's disease (Steck et al., 2001). It was suggested that this may be a result of males being fearful of the feelings related to having a parent with MS, as culturally it is more acceptable for females to express emotion than males (Steck et al., 2001). Given this variation in the pattern of results, continued examination of the possible moderating role of child gender in the context of parental MS is needed.

Parenting and Child Outcomes

Though the link between parental MS and negative psychological outcomes for children is well established, multiple reasons for this link have been suggested, including increased responsibilities for youth (Turpin et al., 2008), marital satisfaction (Brandt & Weinert, 1998), and higher income (Brandt & Weinert, 1998). In addition, two possible mechanisms that fit within a broader literature about influences on children's psychological functioning are parenting (e.g., Maccoby, 2000) and maternal depression (e.g., Turney, 2011). However, these factors have yet to be examined within the context of maternal MS.

Parenting is an important mechanism to consider when examining child psychological functioning. Indeed, research has established that there is an association between parenting behaviors and child adjustment (e.g., Maccoby, 2000). In addition to more broad conceptualizations of parenting, specific parenting behaviors (e.g., warmth, rejection, structure, chaos, support, and coercion) have also been found to be associated with child psychological and psychosocial functioning (for a review, see Darling & Steinberg, 1993). Specifically, it may be best to conceptualize parenting as a number of specific parenting behaviors (Darling & Steinberg, 1993). While there are many different ways of examining parenting, the current study will focus on three specific dimensions: (1) acceptance versus rejection, (2) psychological autonomy versus psychological control, and (3) firm control versus lax control.

One commonly studied example of a specific dimension of parenting is acceptance versus rejection. When examining parenting in terms of acceptance versus rejection,

acceptance is one end of a continuum where parents are characterized by being warm, involved, supportive, loving, and attached to their children, whereas parents who reject their children may be hostile toward their children in addition to more detached and less involved (Butler, Skinner, Gelfand, Berg, & Wiebe, 2007; Schaefer, 1965b). It has been suggested that children require warmth and acceptance from their parents and caregivers (Rohner, Khaleque, & Cournoyer, 2005). Children of parents who are attentive and responsive to their needs have been shown to exhibit fewer externalizing and internalizing problems, in addition to higher self-esteem (Shumow, Vandell, & Posner, 1998; Weiss & Schwarz, 1996). Further, parental acceptance is predictive of the later development of depressive symptoms in undergraduate students (Alloy et al., 2001). The relationship between acceptance and internalizing symptoms, externalizing symptoms, and other types of psychological maladjustment (e.g., substance abuse) has also been established for children across cultures, ethnicities, ages, and gender (Rohner et al., 2005) in addition to various populations of youth (e.g., adolescents with Type I diabetes; Butler, Skinner, Gelfand, Berg, & Wiebe, 2007).

Psychological control is another important dimension of parenting that is important to consider. Parents who are high on psychological control engage in psychological manipulation of their children behaviorally and emotionally, which prohibits them from developing apart from their parents (Schaefer, 1965b). Often, parental psychological control includes the use of tactics such as criticism and guilt (Butler et al., 2007). Both cross-sectional and longitudinal research has consistently demonstrated that psychological control is positively associated with internalizing symptoms (i.e., depression; e.g., Barber et al., 2005) and externalizing symptoms (Barber, 1996). For example, within a sample of adolescents

with diabetes, adolescents' perceptions of their mothers' psychological control was positively associated with symptoms of depression (Butler et al., 2007). In a longitudinal study examining parental monitoring and psychological control, higher levels of psychological control were associated with increased externalizing symptoms (i.e., delinquency) and internalizing symptoms (i.e., depression and anxiety; Pettit, Laird, Dodge, Bates, & Criss, 2001).

The amount of behavioral or firm control parents exert over children has also been found to impact child functioning (Chase-Lansdale & Pittman, 2002). Firm control is the extent to which parents create rules for their children, establish limits and enforce these rules and limits (Butler et al., 2007; Schaefer, 1965b). Broadly, lax control, the lack of firm control, has been demonstrated to be positively associated with externalizing symptoms (Barber, 1996). More specifically, it has been consistently demonstrated that firm control is negatively associated with youths' externalizing symptoms such as delinquency and antisocial behavior (Barber, Olsen, & Shagle, 1994; Barber et al., 2005; Walker-Barnes & Mason, 2004). Behavioral control has also been associated with internalizing symptoms, though less consistently than externalizing symptoms (Barber et al., 2005).

While many researchers have considered combinations of these three variables (e.g., Forehand & Nousiainen, 1993; Lamborn, Mounts, Steinberg, & Dornbusch, 1991; Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994), other researchers have suggested that it might be better to conceptualize parenting by utilizing the more specific parenting dimensions (Darling & Steinberg, 1993), such as the ones outlined above. As such, parenting behaviors are important factors to consider in the relationship between maternal MS and child

psychological functioning, as negative parenting behaviors might contribute to child symptoms.

CI, MS, and Parenting

It is easy to surmise how the physical symptoms (e.g., fatigue, pain, bladder and bowel symptoms, etc.) associated with MS could impact an individual's parenting. A review of the CI literature suggests that CI may impact parents' ability to fulfill their responsibilities as a parent, as symptoms of parents' CI may interfere with tasks associated with parenting (Pedersen & Revenson, 2005). While not widely studied, the available research suggests there is a link between CI and generally poorer parenting. For example, not only are children of mothers with chronic pain more likely to experience adjustment problems, but mothers with chronic pain are also more likely to report engaging in dysfunctional parenting behaviors (i.e., lax or permissive parenting) and having a lower relationship quality with their children when compared to pain-free controls (Evans, Shipton, & Keenan, 2006).

Though parenting has been examined in the relationship between CI and child maladjustment in general, different chronic illnesses may impact parenting in specific ways. Research specifically examining the role of parenting behaviors in relation to MS is limited. However, a more broad review of the literature found that children of parents with MS experienced less family cohesion and more family conflict (Bogosian et al., 2010). Thus, there is preliminary evidence that having a parent with MS is associated with poorer family functioning. In a study of 262 mothers with various chronic illnesses (i.e., 103 with MS, 68

with rheumatoid arthritis, and 91 illness-free control mothers), fatigue explained variance in predicting parental monitoring beyond sleep, depression, and number of children (White, White, & Fox, 2009). Further, mothers with MS reported more fatigue than all other mothers (White et al., 2009). Thus, there is preliminary evidence that fatigue, a common symptom of MS, partially explains mothers' parental monitoring behavior.

Further, in one qualitative study researchers asked parents with MS to report on the difficulties associated with parenting specifically related to their illness via two open-ended questions (Pakenham, Tilling, & Cretchley, 2012). Analyses of the interviews of 119 parents with MS and 64 of their partners indicated that parents experience difficulties related to social relationships, MS symptoms, and their roles as parents. The themes related to social relationships included guilt in response to increasing the amount of their children's responsibilities and being unable to participate in various family activities. In terms of their parental role, parents with MS identified having difficulties participating in recreational activities, transporting their children, and motivating their children to assist with housework (Pakenham et al., 2012). Thus, while few studies have examined the key dimensions of parenting described above, studies have found preliminary results suggesting parenting may be impacted by MS.

Notably, there are few studies that examine how the association between CI and MS on child psychological functioning may be explained by parenting. In the study described above by Evans and colleagues (2006), authoritarian parenting mediated the relationship between maternal chronic pain and child internalizing behavior, externalizing behavior, and physical functioning. This finding suggests the need to examine multiple parenting behaviors

that may serve as mediators in the association between maternal MS and child psychological functioning. Thus, the current study aims to examine whether indirect pathways from maternal MS through three dimensions of negative parenting (i.e., parental acceptance, psychological control, and lax control) to child and adolescent outcomes are supported.

Depression in MS

Maternal depression is another mechanism that may explain the links between MS and child outcomes, especially as maternal depression may influence parenting. One study examined differences between mothers with and without CI and found that children exhibited more symptomatology in the context of poorer parenting and maternal distress (Annunziato et al., 2007). Thus, Toombs, Barnard, and Carson (1993) explain that the life experiences of individuals living with CI are different from individuals living without an illness. That is, those who are living with CI are often plagued by loneliness and feel alienated from other individuals and society. Perceived stigma or threat associated with being diagnosed with a CI may cause the individual to experience distress (Pedersen & Revenson, 2005).

Not surprisingly, a diagnosis of MS is associated with increased risk for experiencing negative emotions (Bogosian et al., 2010) and developing depression, and this is especially true for women (Jobin, Larochelle, Parpal, Coyle, & Duquette, 2010). In fact, the lifetime prevalence rate of major depression in individuals diagnosed with MS ranges from 47-54% (Feinstein, 2004; Minden, 2000) compared to a lifetime prevalence rate of approximately 16% in the general population (Reeves et al., 2011). In addition, it has been suggested that the

prevalence of depression in MS is higher than all other neurologic diseases (Schubert & Foliart, 1993). In particular, fatigue, a ubiquitous symptom common among patients with MS, and physical disability were associated with depressed mood in a sample of individuals with MS (Voss et al., 2000). Moreover, greater MS symptom severity is associated with increased risk for experiencing clinically significant depressive symptoms (Chwastiak et al., 2002). Suicidal ideation also manifests in approximately 30% of individuals diagnosed with MS and is often strongly related to the severity of MS symptoms and the amount of isolation individuals experience (Feinstein, 2002). Rates of completed suicide are higher in patients diagnosed with MS compared to both other neurologic disorders and the general population (Sadovnik, Eisen, Ebers, & Paty, 1991). Therefore, there appears to be an increased risk for developing depression for individuals diagnosed with MS, and this may also be influencing their children's psychological functioning.

Depression, Parenting, and Child Outcomes

Previous research has strongly supported the association between parental depression and poorer psychological functioning of children (e.g., internalizing and externalizing behaviors; Gravener et al., 2012; Turney, 2011). This suggests that maternal depression may help explain the association between maternal MS and negative child outcomes. Research has also shown that depression is associated with poorer parenting (Downey & Coyne, 1990). Depression is suggested to impact parenting skills in multiple ways. Specifically, parents who are depressed are more likely to communicate with flat speech, engage in fewer positive

responses with their children and increased levels of negativity, and are more irritable compared to non-depressed parents, which in turn combine to foster negative relationships, particularly parent-child relationships (Downey & Coyne, 1990).

Furthermore, depressed parents have been found to have poorer child management skills (e.g., Davenport, Zahn-Waxler, Adland, & Mayfield, 1984), where these skills have been described as minimal and unrealistic (Radke-Yarrow & Klimes-Dougan, 2002). In one study, maternal and paternal depressive symptoms were associated with increased levels of interparental conflict, which operated through negative parenting (i.e., lower parental acceptance and closeness) to impact children's internalizing and externalizing symptoms (Shelton & Harold, 2008). Positive changes in maternal parenting behaviors (i.e., increases in warmth and acceptance) were also observed in a sample of depressed mothers whose depressive symptoms improved after 3 months of treatment (Foster et al., 2008). Overall, depressed parents often exhibit higher levels of irritability, hostility, and disengagement toward their children (Lovejoy, Graczyk, O'Hare, & Neuman, 2000).

In fact, negative parenting behaviors have been found to mediate the relationship between depression and the negative outcomes of children. For example, authoritative parenting style has been found to mediate the association between parental depression and externalizing behaviors in a sample of parents with children with autism spectrum disorders (ASD; Xu, Neece, & Parker, 2014). Additionally, maternal depression has been found to partially mediate the association between maternal trauma exposure and negative parenting (i.e., neglect, use of physical punishment, and lower parenting satisfaction; Banyard,

Williams, & Siegel, 2003). Thus, maternal depression partially explained the association between a group of at-risk mothers and negative parenting behaviors.

Specific to MS, depression in individuals with MS has been found to impact child psychological functioning indirectly through family functioning (Pakenham & Cox, 2012). Specifically, in a longitudinal study of 85 families with a parent with MS, results indicated that parental depression was directly associated with family functioning (i.e., family conflict and family cohesion), which was subsequently associated with child psychological functioning (Pakenham & Cox, 2012). This study suggests that depression in parents with MS impacts the family systems as a whole; however, the study limited the definition of family functioning to family conflict and cohesion. However, to date, no one has considered how maternal depression may influence parenting which in turn may influence children's outcomes when the mother has MS. Therefore, the current study will expand existing literature on the association between maternal depression and parenting by examining whether maternal depression partially explains the association between maternal MS and negative parenting behaviors as well as child outcomes.

The Current Study

The CI literature is currently lacking in a number of areas that need to be addressed. Broadly, the overall literature on parental MS and its associations with child and adolescent maladjustment is limited both in quantity and scope. The current study aimed to expand the literature related to this topic by examining the relationship between maternal MS severity

and child psychological functioning, considering how maternal depression and parenting may act as mediators, as well as how child gender may act as a moderator of this association.

This study focused on mothers, as women are more likely to receive a diagnosis of MS and these women are likely to be impacted by MS at ages when they may be parenting their children (i.e., 20-50 years of age). Since the gender of the parent diagnosed with MS may influence the relationship between parental MS and child outcomes (see Evans et al., 2007) and there is research suggesting that mother-child interactions have the largest impact on child development (Barnard & Solchany, 2002), fathers with MS were not included in this study.

Overall, this study improved upon past research by focusing specifically on one CI (i.e., MS) rather than lumping all types of CI together. Further, the current study collected data on a wide age range of children while examining child gender as a potential moderating variable, as CI and MS literatures are not clear about the role child gender plays in child psychological functioning. Another weakness present in the literature examining the impact parental MS has on children is that it does not examine mechanisms through which MS may be impacting child functioning. Thus, the current study examined mechanisms that explain this relationship (i.e., maternal depression and parenting).

Hypotheses

Previous research, though limited, suggests that there is a relationship between parental MS and children's psychological functioning. Specifically, research suggests that

more severe presentations of MS are associated with poorer child psychological functioning (Horner, 2012). Therefore, the following hypothesis was tested:

H1. More severe symptoms of maternal MS will be associated with greater internalizing and externalizing symptoms in children.

Literature examining CI and MS is mixed in findings regarding the moderating role of child gender. Specifically, the CI literature suggests that sons tend to cope better with parental CI than daughters (i.e., Romer et al., 2002), and the MS literature suggests that daughters tend to cope better with parental MS than sons (i.e., Steck et al., 2001). Literature related to how a child's gender will impact his or her psychological functioning is unclear. Therefore, in order to better tease apart the effect of child gender, the following research question was examined:

RQ. Does child gender moderate the association between maternal MS severity and child psychological functioning (i.e., internalizing and externalizing symptoms)?

Research also shows a link between CI and poorer parenting (e.g., Evans, Shipton, & Keenan, 2006), as having a CI may impact parents' abilities to fulfill their responsibilities as a parent (Pedersen & Revenson, 2005). Additionally, there is a strongly established link between poor parenting and negative outcomes in children (e.g., Amato & Fowler, 2002; Prevatt, 2003). In order to better understand this relationship in the context of maternal MS, the current study offered the following hypothesis:

H2. Maternal MS severity will have an indirect influence on children's outcomes through its influence on parental acceptance, psychological control, and lax control, each considered individually.

Additionally, not only is there an established link between parenting and child psychological functioning, but there is also an established link between parental depression, negative parenting behaviors, and child psychological functioning (Radke-Yarrow & Klimes-Dougan, 2002). This link has not been examined within the context of maternal MS.

Therefore, to better understand the indirect pathways involved in the relationship between maternal MS and child psychological functioning, the following hypothesis was offered:

H3. The association between MS severity and child psychological functioning (i.e., internalizing and externalizing symptoms) may be explained through indirect associations through maternal depression and parenting variables (i.e., parental rejection, psychological control, and lax control), each considered separately.

CHAPTER 2

METHOD

Participants

Participants ($N = 133$) were recruited through multiple mechanisms, including: 1) the research websites of the National MS Society and the MS Foundation; 2) newsletters with information about the present study and the link to the research website from the Greater Illinois chapter of the National MS Society; 3) one private practice distributed research materials to MS patients; 4) two physical therapy practices posted and distributed recruitment flyers to patients; 5) one MS treatment center posted flyers; 6) three neuroscience and/or neurology departments or practices sent recruitment flyers to potential participants; 6) three hospitals or healthcare centers distributed flyers on a case-by-case basis and posted flyers; and 7) one online organization posted recruitment materials to a wide-reaching online MS forum. Based on a power analysis done in G*Power (effect size = 0.2, α err probability = 0.05, number of predictors = 2; Erdfelder, Faul, & Buchner, 1996; Faul, Erdfelder, Lang, & Buchner, 2007), the goal was to obtain 100 participants. Inclusion criteria were that mothers reported having a diagnosis of MS and at least one child ranging from 6- to 18-years-of-age. Participants who did not respond to all measures (i.e., maternal depressive symptoms, child psychological functioning, maternal MS severity, or parenting behaviors) were excluded from

the dataset ($n = 43$). Seven participants completed only the first measure, 12 participants completed only the first two measures, and 24 completed the first three measures. Mothers who identified that their child had one or more significant disabilities (e.g., chronic illnesses such as cancer, physical disabilities such as spina bifida, significant intellectual disability, ASD) were excluded from all analyses ($n = 6$), as having a child with a disability may contribute uniquely to the experience of parenting. Once these exclusion criteria were applied, 84 participants remained. However, composites for MS severity could not be calculated for nine participants due to missing data, and composites for maternal lax control could not be calculated for one of those nine participants. Therefore, the final sample included 75 participants.

The sample in this study included mothers ranging from ages 26 through 58 ($M = 40.81$, $SD = 7.26$), and the majority of participants identified as Caucasian (83%; 9% Latina; 4% African American; 1% Multiracial, 3% missing). Participants reported on their relationship with their child(ren)'s biological father, and 36% indicated they were married, others reported their relationship with the biological father was divorced or separated (8%), never married (3%), or other (3%; e.g., father deceased), with 50% missing data. If mothers were in a separate relationship other than a relationship with their child(ren)'s biological father, they also indicated their current relationship status (i.e., married 4%; divorced or separated 5%, and other 4%). Most mothers reported having completed college (37%; 28% college plus completion of graduate or professional school), while others reported a high school diploma as their highest level of education (12%; 23% had also completed some college). According to the Hollingshead coding system, SES of the current sample ranged

from 23 to 66, with higher numbers indicating higher socioeconomic status ($M = 48.82$, $SD = 11.21$; Hollingshead, 1975). More specifically, 7% of participants fell in the semi-skilled worker category; 12% fell in the skilled craftsmen, clerical, and sales worker category; 40% fell in the medium business, minor professional, and technical category; 31% fell in the major business professional category; and there were 11% missing data. With respect to their diagnoses, the majority of mothers either did not report on or did not know their specific type of MS diagnosis (51%); those who did know indicated being diagnosed with relapsing-remitting MS (RRMS; 48%), and a few indicated being diagnosed with secondary-progressive MS (SPMS; 1%). It was expected that the majority of participants would be diagnosed with RRMS, as it is the most commonly diagnosed type of MS; SPMS is less common, as reflected in this sample. Almost half (45%) of the sample indicated being previously diagnosed with a major depressive episode. Only 39 mothers reported on the age and gender of their children. Of those, slightly more than half were reported to be female (54%; 46% male). The age of children reported on in this study ranged from 6 to 18 ($M = 12.44$, $SD = 3.65$).

Procedures

After indicating an interest in the study, participants were directed to a secure, online data collection forum (i.e., Qualtrics). On this website, participants first provided their consent (see Appendix A) to participate in the online study. They then completed the following battery of measures in the same order each time: a demographics form, the MS Quality of Life (MSQOL; Vickrey, Hays, Harooni, Myers, & Ellison, 1995), the Center for Epidemiologic

Studies Depression Scale (CES-D; Radloff, 1977), the Parent Report of Parent Behavior (Schaefer, 1965b), the Child Behavior Checklist (CBCL; Achenbach & Ruffle, 2000), and lastly other measures not being used for this thesis. Completion of all measures took approximately 45-60 minutes. After completing the battery of measures, participants were fully debriefed online regarding the aims of the current study (see Appendix B). Finally, after completing all study-related procedures, participants were entered in a drawing to win a cash prize of \$100. Additionally, all participants received various parenting resources designed to assist parents diagnosed with MS. To be entered in the drawing, participants could choose to enter their name and contact information (e.g., their email address) in a survey that was separate from the larger survey in order to obtain information for the purposes of the drawing to ensure participants' anonymity. The drawing, however, was sent via mail to the address provided in the separate survey after confirming the address via email.

Measures

Demographic Information

Participants were asked to fill out a demographic questionnaire that included information regarding their age, ethnicity, information about their children (e.g., whether they have a disability), and information about other individuals who may be responsible for caring for their child or children (e.g., their biological father, a father figure, a grandparent, or an aunt or uncle), including any specific custodial arrangements. As the study aimed to collect

information from individuals diagnosed with MS, information about their diagnosis (i.e., type of MS, treatments, and whether they believe they have adequate resources to meet their healthcare needs) was gathered. The specific form used to collect this information is provided in Appendix C.

Illness Severity

Severity of illness related to participants' diagnosis of MS was assessed using the MS Quality of Life scale (MSQOL), a 54-item self-report measure of quality of life (Vickrey et al., 1995). The MSQOL contains 12 multi-item scales and two single-item scales designed to assess different domains of functioning affected by a diagnosis of MS: physical health, role limitations due to physical problems, role limitations due to emotional problems, pain, emotional well-being, energy, health perceptions, social function, cognitive function, health distress, overall quality of life, sexual function, change in health, and satisfaction with sexual functioning. Additionally, the measure can be divided into three composite scales: physical health, mental health, and an overall index (O'Connor, Lee, Ng, Narayana, & Wolinsky, 2001). Scores for each subscale are computed by taking the mean of the items that compromise that subscale, with higher scores indicating higher quality of life. Because of the specific interest in participants' functioning related to their physical health as well as wanting to minimize the overlap between this assessment and the measure of maternal depression, this study focused on the physical health composite as a measure of MS illness severity, which is composed of the following subscales: physical health, role limitations due to physical

problems, pain, energy, health perceptions, social function, health distress, and sexual function. See Appendix D for the measure.

The MSQOL has been found to be a reliable instrument specifically for samples of individuals with MS. Cronbach's alphas for each of the eight multi-item scales on the physical health composite were .96, .86, .92, .84, .80, .75, .91, and .85 for physical function, role limitations due to physical problems, pain, energy, health perceptions, social function, health distress, and sexual function, respectively (Vickrey et al., 1995). Cronbach's alpha for the physical health composite was .96 (Vickrey et al., 1995). Test-retest reliabilities, when the MSQOL was completed by participants within 30 days of initially completing the measure, were .96, .67, .86, .85, .69, .77, .78, and .94 for physical function, role limitations due to physical problems, pain, energy, health perceptions, social function, health distress, and sexual function, respectively (Vickrey et al., 1995). In addition to reliability estimates, the MSQOL was also found to have good construct validity. This was supported by the fact that individuals with more severe symptoms of MS, as assessed by a 10-point, self-report scale separate from the MSQOL, reported higher scores on the MSQOL, indicating that they had a better quality of life (Vickrey et al., 1995). Additionally, more severe MSQOL scores were associated with participants' current ambulation status, employment and school limitations, number of admissions to the hospital in the past year, and symptoms of depression (Vickrey et al., 1995). In the current study, the Physical Health Composite (i.e., the composite utilized to define MS symptom severity) demonstrated good internal consistency ($\alpha = .80$). All of the above evidence converges to suggest that the MSQOL is a reliable and valid instrument to assess MS symptom severity.

Maternal Depression

Maternal depressive symptoms were assessed by the CES-D, a self-report measure with 20 items that has been used in the general population to assess depressive symptoms (Radloff, 1977). Participants responded to items on a 4-point scale based on the depressive symptoms they have been experiencing in the past week (e.g., “I did not feel like eating; my appetite was poor”). Response options range from 0 (*one day in the past week*) to 3 (*5-7 days in the past week*). The CES-D yields a total score of depressive symptoms by adding the responses of the items, with higher scores indicating higher levels of depressive symptoms. See Appendix E for measure.

The CES-D was found to have good reliability in United States populations. Specifically, Cronbach’s alphas have ranged from .84 to .90 (Radloff, 1977). Test-retest reliabilities, however, varied by intervals between test and retest periods. The range of test-retest reliabilities from 2 to 8 weeks was .51 to .67, and the range of test-retest reliabilities from 3 to 12 months was .48 to .54. Radloff (1977) indicates that these moderate test-retest correlations may be due to the fact that the measure was designed to assess depressive symptoms in the past week, rather than levels of symptoms over time. In terms of validity, the CES-D discriminated well between inpatient and general population samples, and it also discriminated between levels of severity within these groups (Radloff, 1977). In addition, the CES-D was positively correlated with other measures designed to assess depressive symptoms (e.g., the Depression Adjective Checklists; Lubin, 1967), and it was negatively correlated with

a measure of positive affect (i.e., the Bradburn Positive Affect Scale; Bradburn, 1969; Radloff, 1977). In the current study, the CESD Total Scale demonstrated excellent internal consistency ($\alpha = .93$). All evidence related to validity indicates that the CES-D is a valid and internally consistent measure of depression.

Parenting

Parenting behaviors were assessed using the Parent Report of Parent Behavior Inventory (PRPBI; Schaefer, 1965b), a modified version of the Child Report of Parent Behavior Inventory (CRPBI; Schaefer, 1965a; Schludermann & Schludermann, 1970). The CRPBI and the PRPBI are derived from the same measure that was originally designed to obtain a child-reported measure of parenting behaviors (Schaefer, 1965a). The original measure contained 260 items that were organized into 26 subscales containing 10 items each, and a subsequent factor analysis ended in a 192-item, 18-factor scale with the 18 factors combining into three primary dimensions of parenting behavior: (1) acceptance versus rejection, a measure of how involved or warm parents are compared to how detached and hostile they are toward their children; (2) psychological autonomy versus psychological control, a measure of the extent to which parents psychologically regulate their children's behaviors while not allowing them psychological independence; and (3) firm versus lax control, a measure of the extent to which parents place rules and limits on their children's behavior (Schaefer, 1965b). These factors were replicated in further studies of the CRPBI with both children and adult reports (Schaefer, 1965b). A shorter version of the CRPBI and PRPBI has been developed that includes the same three primary dimensions using 56 items

(i.e., Margolies & Weintraub, 1977). This 56-item version has demonstrated similar scores to the original version (Burger & Armentrout, 1971; Margolies & Weintraub, 1977).

Like with the full version, the 56-item version is separated into three dimensions: acceptance versus rejection (24 items; e.g., “I almost always speak to my child with a warm and friendly voice”), psychological autonomy versus psychological control (16 items; e.g., “I don’t pay much attention to my child’s misbehavior”), and firm versus lax control (16 items; e.g., “I think and talk about things my child has done wrong long after it is over”).

Participants are asked to rate whether each statement is *Just Like You* (i.e., 3), *A Little Like You* (i.e., 2), or *Not at All Like You* (i.e., 1). Higher scores on each dimension indicate more acceptance, psychological control, and lax discipline, respectively. The PRPBI can be viewed in Appendix F.

Using the full version, all of the dimensions have been shown to have good reliability across multiple samples of participants. Specifically, in the original sample on which the measure was developed, internal consistencies were examined utilizing the Kuder-Richardson formula, and median values ranged from .66 to .84 (Schaefer, 1965a). Internal consistency of the CRPBI has also been examined and found to be good across multiple studies. In one study, Chronbach’s alphas across four raters of parent behavior (i.e., mothers, fathers, siblings, and a subject child) ranged from .57 to .82 for mothers and from .63 to .86 for fathers (Schwarz, Barton-Henry, & Pruzinsky, 1985). Further, researchers have provided further evidence of good reliability, as the CRPBI has been shown to be highly replicable across different types of independent samples (i.e., cross-culturally; e.g., Butler, Skinner, Gelfand, Berg, & Wiebe, 2007; McClure, Brennan, Hammen, & Le Brocque, 2001; Schludermann &

Schludermann, 1970). Additionally, research has consistently supported the three-factor structure of the original measure (e.g., Schaefer, 1965a; Schludermann & Schludermann, 1970).

The revised version of the CRPBI has also been found to be psychometrically strong. Like with the full version, the original three-factor structure was found in the revised 56-item version of the CRPBI (Margolies & Weintraub, 1977). In addition to supporting the original three-factor structure of the CRPBI, the 56-item measure has also demonstrated good test-retest reliability over 1-week (.55 to .93) and 5-week (.79 to .93) periods (Margolies & Weintraub, 1977). Additionally, internal consistency has been examined across multiple studies. More specifically, the 56-item version demonstrated good internal consistency across studies and for children of various ages (Cronbach's alpha ranged from .77 to .95; McCoy, George, Cummings, & Davies, 2013; Peris, Goeke-Morey, Cummings, & Emery, 2008; Shelton & Harold, 2008; Suchman, Rounsaville, DeCoste, & Luthar, 2007). Therefore, the PRPBI can be used to measure participants' parenting behaviors in a reliable and valid manner. In the current study, the Acceptance versus Rejection, Firm versus Lax Control, and Psychological Autonomy versus Psychological Control subscales all demonstrated excellent internal consistency ($\alpha = .97$, $\alpha = .96$, and $\alpha = .93$, respectively).

Child Psychological Functioning

The CBCL is a standardized instrument in which parents fill out information regarding their children's emotional and behavioral problems (Achenbach & Ruffle, 2000). The

instrument is widely used in identifying dysfunctional behavior in children (Achenbach & Rescorla, 2001). Parents responded to 138 (118 regarding specific problems and 20 regarding competence) items on their child's social, behavioral, and emotional problems. Parents assessed problem behaviors in children ages 6 to 18 by rating each item on a scale of 0 (*not true as far as you know*) to 2 (*very true or often true*). Additionally, the CBCL is divided into eight syndrome scales that assess a variety of domains of problem behavior: anxious/depressed, withdrawn/depressed, somatic complaints, thought problems, attention problems, social problems, rule-breaking behavior, and aggressive behavior (Achenbach & Rescorla, 2001). Items from each syndrome are added to produce an overall score for that scale, with higher scores indicating increased levels of problems assessed by that scale. In addition, items on the anxious/depressed, withdrawn/depressed, and somatic complaints scales can be combined to create a scale of internalizing problem behaviors. Similarly, items on the rule-breaking behaviors and aggressive behaviors can be combined to create a scale of externalizing problem behaviors. Though it is recommended internalizing and externalizing problems be examined utilizing t-scores, they were not used because of missing data on the child gender variable that did not allow for calculation of t-scores. As such, raw scores for internalizing and externalizing problems were used in the current study. The eight scales of the measure have been found to be appropriate for children with diverse cultural backgrounds (Ivanova et al., 2007). Specifically, data from 58,051 children ages 6 to 18 from 30 societies worldwide were analyzed and confirmatory factor analyses demonstrated good fit with each of the 30 societies.

Psychometrically, the CBCL has been found to have good reliability and validity (Achenbach & Rescorla, 2001). When items were separated by type (i.e., specific problem items versus competence items), intraclass correlations of test-retest reliabilities, as well as reliabilities based on scores by different interviewers, ranged from .93 to 1.00. Internal consistency of the CBCL was high, with coefficients ranging from .63 to .79 for all scales. Additionally, scores appeared to be stable over 12- and 24-month time periods. In terms of validity, Achenbach and Rescorla (2001) present multiple types of evidence to demonstrate the content validity. Specifically, there are years of research, feedback, and revisions that have been done on the CBCL to strengthen the validity of the instrument. Additionally, items have been found to discriminate between children who have been referred for psychological services and those who have not (Achenbach & Rescorla, 2001). In addition to content validity, the CBCL has been found to be associated with similar scales of different instruments, and it has been found to be associated with long-term child outcome predictions (Achenbach & Rescorla, 2001). The above evidence indicates that the CBCL has good construct validity. The current study focused specifically on internalizing and externalizing composite scores, and the internalizing and externalizing composites demonstrated excellent internal consistency ($\alpha = .89$ and $\alpha = .92$, respectively).

CHAPTER 3

RESULTS

Preliminary Analyses

Given the significant number of participants who were excluded from primary analyses ($n = 58$) and in order to determine if any differences exist in the two groups, *t*-tests of independent and dependent variables were conducted comparing those included to those excluded in the analyses. As shown on Table 1, participants who were included in analyses reported significantly fewer depressive symptoms, higher levels of maternal acceptance at the level of a trend, lower levels of lax control, lower levels of psychological control at the level of a trend, and less severe symptoms of MS, lower child internalizing symptoms, and lower externalizing symptoms at a trend level. Therefore, attrition impacted those who remained in the sample, as it includes overall better functioning families.

Descriptive statistics of all variables are presented in Table 2. All variables had appropriate ranges and acceptable values of skewness and kurtosis (i.e., between -2 and 2; George & Mallery, 2010). Forty-one percent of the sample in the current study fell above the cutoff for clinical depression (Radloff, 1977), which is consistent with previous studies examining the prevalence of major depression in individuals diagnosed with MS (i.e., 47-54%; Feinstein, 2004; Minden, 2000). Given only 39 parents reported on the gender of their child, clinical cutoffs for internalizing and externalizing symptoms could not be calculated for

Table 1

Independent *T*-Tests of Independent and Dependent Variables Included in Analyses Compared to Those Excluded from Analyses

Variables	Included		Not Included		<i>t</i>-value
	<i>n</i>	M (SD)	<i>n</i>	M (SD)	
Maternal Depressive Symptoms	75	21.23 (13.21)	57	26.35 (12.01)	-2.29*
Maternal Acceptance	75	58.68 (14.97)	37	52.78 (18.07)	1.66+
Maternal Lax Control	75	23.91 (9.25)	37	28.74 (9.61)	-2.54*
Maternal Psychological Control	75	27.10 (9.00)	35	30.69 (8.84)	-1.97+
MS Severity	75	51.07 (19.09)	31	63.75 (16.31)	-3.24**
Child Internalizing Symptoms	75	38.64 (6.68)	17	47.35 (12.17)	-4.09***
Child Externalizing Symptoms	75	41.40 (7.52)	17	45.53 (10.52)	-1.89+

Notes. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 2

Descriptive Statistics of Independent and Dependent Variables for Participants

Independent Variable	M (SD)	Range	Skewness	Kurtosis
Maternal Depressive Symptoms	21.23 (13.21)	0-48	0.27	-0.97
Maternal Acceptance	58.68 (14.97)	26-75	-0.84	-0.72
Maternal Lax Control	23.91 (9.25)	15-44	1.03	-0.31
Maternal Psychological Control	27.10 (9.00)	16-48	0.75	-0.47
MS Severity	51.07 (19.09)	8.53-82.93	-0.60	-0.44
Child Internalizing Symptoms	38.64 (6.68)	32-62	1.20	1.06
Child Externalizing Symptoms	41.40 (7.52)	35-71.18	1.77	1.30

the entirety of the sample; however, of the 35 participants who reported on child gender and who were also included in the sample, 6% of children were within the clinical range for internalizing symptoms, and 0% of the children were within the clinical range for externalizing symptoms according to cutoffs outlined for the CBCL (Achenbach & Ruffle, 2000).

In order to determine variables to use as controls in the main analyses, *t*-tests for categorical demographic variables (i.e., minority status, marital status, resources, and whether the participant is receiving treatment for her medical symptoms of MS) and bivariate correlations for continuous variables (i.e., child age, mother age, and level of education completed by the mother) were run. *T*-tests (see Table 3) indicated no differences in internalizing or externalizing symptoms based on minority status (i.e., whether participants are among a minority group or not), marital status (i.e., married versus single), and child gender.¹ Bivariate correlations (see Table 4) indicated mothers' age had a significant negative association with child internalizing symptoms but not child externalizing symptoms; however, mother's level of education was not significantly associated with child internalizing or externalizing symptoms. Further, socioeconomic status (SES) was not associated with child internalizing or externalizing symptoms, though the association between SES and child externalizing symptoms was trending in a positive direction. Accordingly, mothers' age was included as a control variable in the main analyses.

Bivariate correlations among independent and dependent variables are presented in Table 4. Maternal depressive symptoms were associated with all variables. Specifically, maternal depressive symptoms were positively associated with psychological control, lax discipline, MS symptom severity, and child internalizing and externalizing symptoms and

¹ Note the sample size for child gender is 39, and the sample size for current marital status is 37 due to an error in questionnaire formatting allowing individuals to skip questions easily.

Table 3

Independent *T*-Tests of Demographic Variables and Children's Psychological Symptoms

Demographic Variables	Internalizing Symptoms		Externalizing Symptoms	
	M (SD)	<i>t</i> -value	M (SD)	<i>t</i> -value
Minority Status		0.33		0.05
Caucasian (<i>n</i> = 62)	38.69 (6.72)		41.41 (6.99)	
Minority (<i>n</i> = 11)	37.97 (6.70)		41.28 (10.68)	
Marital Status		0.22		- 0.71
Married (<i>n</i> = 30)	38.80 (7.40)		38.90 (4.60)	
Divorced /Not Married (<i>n</i> = 7)	38.14 (5.43)		40.29 (4.89)	
Child Gender		-0.64		-1.26
Male (<i>n</i> = 18)	37.83 (5.92)		38.11 (4.44)	
Female (<i>n</i> = 17)	39.35 (8.03)		40.07 (4.74)	

Notes. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 4

Bivariate Correlations Among Continuous Demographic, Independent, and Dependent Variables

Variables	1	2	3	4	5	6	7	8	9	10
1. Maternal Depression	--									
2. Maternal Acceptance	-.31**	--								
3. Maternal Lax Control	.33**	-.84***	--							
4. Maternal Psychological Control	.33**	-.82***	.83***	--						
5. MS Severity	.63***	-.18	.27*	.26*	--					
6. Child Internalizing Symptoms	.34**	-.21+	.27*	.22*	.27*	--				
7. Child Externalizing Symptoms	.25*	-.22*	.11	.14	.27*	.65***	--			
8. Maternal Age	-.25*	.02	-.03	-.05	-.07	-.13	-.25*	--		
9. Maternal Level of Education	-.45***	.20+	-.22+	-.20+	-.37**	-.05	-.11	.19+	--	
10. SES	-.35**	.00	-.09	.01	-.38**	-.08	-.22+	.44***	.64**	--

Notes. + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

negatively associated with maternal acceptance. Further, maternal MS symptom severity was not associated with maternal acceptance, but positively associated with both maternal lax and psychological control. Maternal MS symptom severity was also positively associated with child internalizing and externalizing symptoms. As would be expected, all parenting behaviors were significantly correlated with each other, with acceptance being negatively associated with psychological control and lax discipline, and psychological control and lax discipline being positively associated with each other. Further, child internalizing symptoms was positively associated with maternal lax discipline and psychological control and, at a trend level, negatively associated with maternal acceptance. In contrast, child externalizing symptoms was negatively associated with maternal acceptance and not associated with lax discipline or psychological control. Dependent variables (i.e., child internalizing and externalizing symptoms) were also positively associated with each other.

Primary Analyses

In order to test Hypothesis 1, partial correlations, controlling for maternal age, indicated mother MS severity was positively associated with both child internalizing, $r(71) = .27, p = .02$, and externalizing symptoms, $r(71) = .27, p = .02$. Thus, Hypothesis 1, that maternal MS severity is positively associated with child internalizing and externalizing problems, was supported. Because child gender, a key variable, was missing for many participants, the research question (i.e., that child gender moderates the association between maternal MS severity and child internalizing and externalizing symptoms) was not explored as there was a lack of power to detect significant results.

In order to test Hypothesis 2, indirect effects analyses were conducted using ordinary least squares regression examining the association of maternal MS severity to child psychological functioning (i.e., internalizing and externalizing symptoms), both directly and separately through each of the negative parenting behaviors (i.e., rejection, psychological control, and lax control) based on methods developed by Hayes (2013). In order to determine if Hypothesis 2 was supported, indirect effects were tested using a 95% bias-corrected bootstrap confidence interval with 10,000 bootstrap samples. These bootstrap samples were calculated with the PROCESS macro in SPSS (Hayes, 2013). If the 95% confidence interval did not include zero, the indirect effect was considered significant. The analyses outlined above were repeated for each parenting variable (i.e., acceptance versus rejection, psychological control versus psychological autonomy, and firm versus lax control). Of note, maternal age was controlled for in all regressions given its negative association with child externalizing symptoms.

Prior to the consideration of Hypothesis 2, the direct effects of independent variables on dependent variables were first examined. As shown in the second column of Table 5, MS symptom severity was not associated with maternal acceptance in the direct association model; however, maternal MS symptom severity was positively associated with both lax discipline and psychological control, mirroring the associations described above. In the model including both symptom severity and the specific parenting dimension, MS symptom severity was consistently positively associated with child internalizing symptoms at a trend level. Maternal MS symptom severity was also positively associated with child externalizing symptoms in all three parenting models, although it was only significant at a trend level in the

Table 5

Model Coefficients for the Indirect Effects Model in Which Severity Predicts Outcomes
Through Parenting Behaviors

	DVs					
	Maternal Acceptance		Internalizing Symptoms		Externalizing Symptoms	
	Coeff.	SE	Coeff.	SE	Coeff.	SE
IVs: Maternal Acceptance Model						
Severity	-0.14	0.09	0.08+	0.04	0.09+	0.04
Maternal Acceptance	--	--	-0.07	0.05	-0.11*	0.05
Maternal Age	0.11	0.24	-0.15	0.10	-0.22+	0.11
<i>F</i>	1.31		3.36		4.80	
<i>R</i> ²	0.04		0.13*		0.17**	
IVs: Lax Control Model						
Lax Control						
Severity	0.13*	0.06	0.07+	0.04	0.09*	0.05
Lax Control	--	--	0.17*	0.08	0.06	0.10
Maternal Age	-0.08	0.15	-0.14	0.10	-0.22+	0.12
<i>F</i>	3.05+		4.23		3.40	
<i>R</i> ²	0.08		0.16**		0.13*	
IVs: Psych Control Model						
Psych Control						
Severity	0.12*	0.05	0.08+	0.04	0.09*	0.05
Psychological Control	--	--	0.12	0.09	0.07	0.10
Maternal Age	-0.13	0.14	-0.14	0.10	-0.22+	0.12
<i>F</i>	3.18		3.39		3.46	
<i>R</i> ²	0.08*		0.13*		0.13*	

Notes. + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$; IV= Independent Variables, DV= Dependent Variables, Psych = Psychological.

maternal acceptance model. Additionally, child internalizing symptoms was positively associated with maternal lax discipline (see the middle of Table 5 and Figure 1), but not with either maternal acceptance or psychological control (see the top of Table 5 and Figure 2, and the bottom of Table 5 and Figure 3, respectively). In addition, only maternal acceptance was negatively associated with child externalizing symptoms (see the last column on Table 5 and Figures 4 through 6).

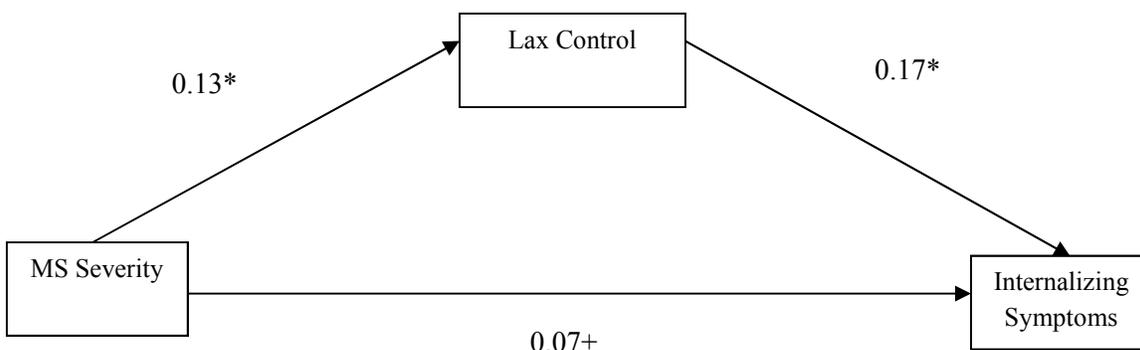


Figure 1: Diagram of simple mediation model with maternal MS severity predicting internalizing symptoms through lax control using unstandardized coefficients.

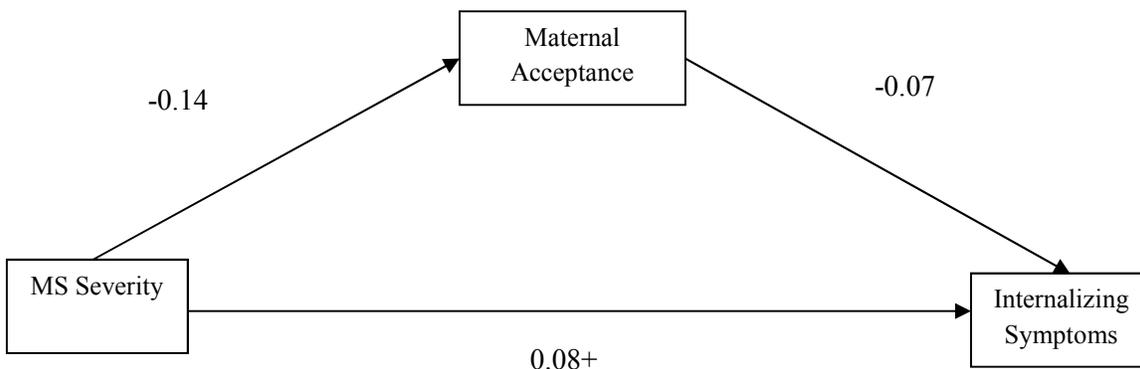


Figure 2: Diagram of simple mediation model with maternal MS severity predicting internalizing symptoms through maternal acceptance using unstandardized coefficients.

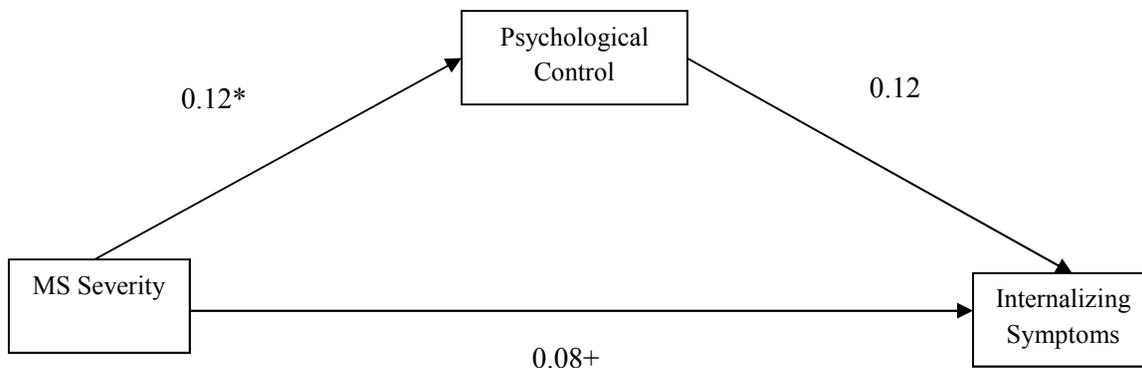


Figure 3: Diagram of simple mediation model with maternal MS severity predicting internalizing symptoms through psychological control using unstandardized coefficients.

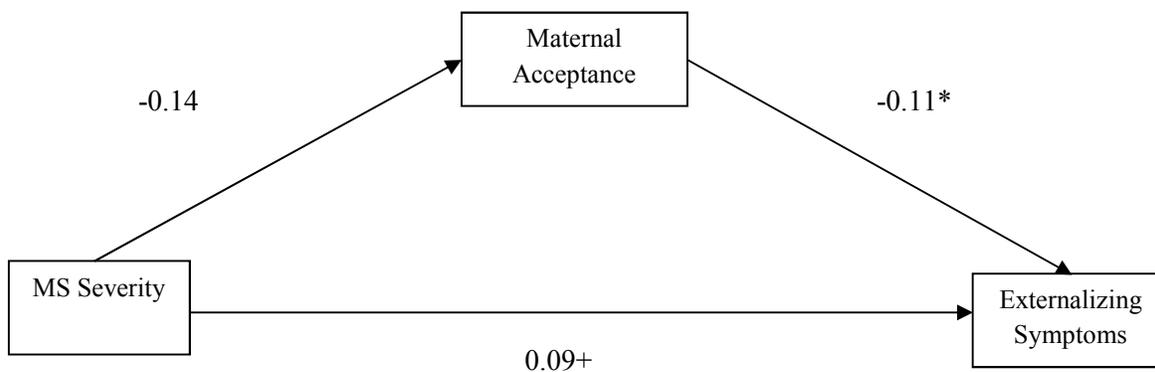


Figure 4: Diagram of simple mediation model with maternal MS severity predicting externalizing symptoms through maternal acceptance using unstandardized coefficients.

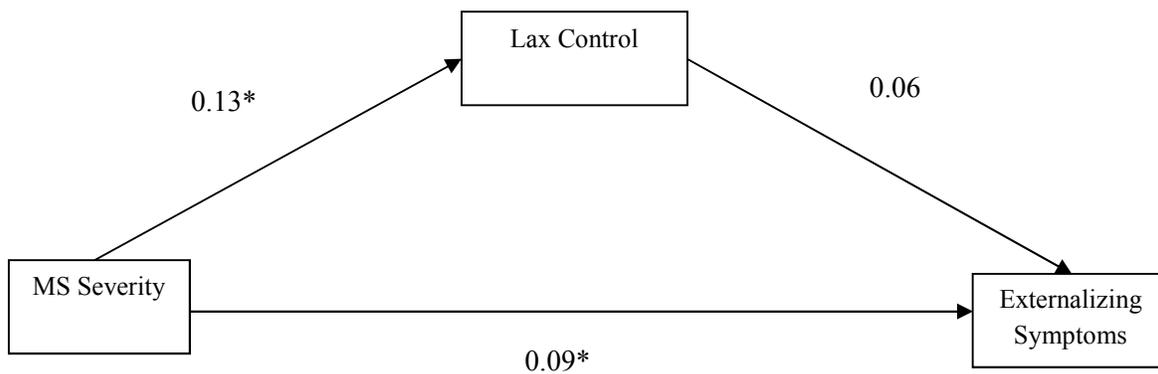


Figure 5: Diagram of simple mediation model with maternal MS severity predicting externalizing symptoms through lax control using unstandardized coefficients.

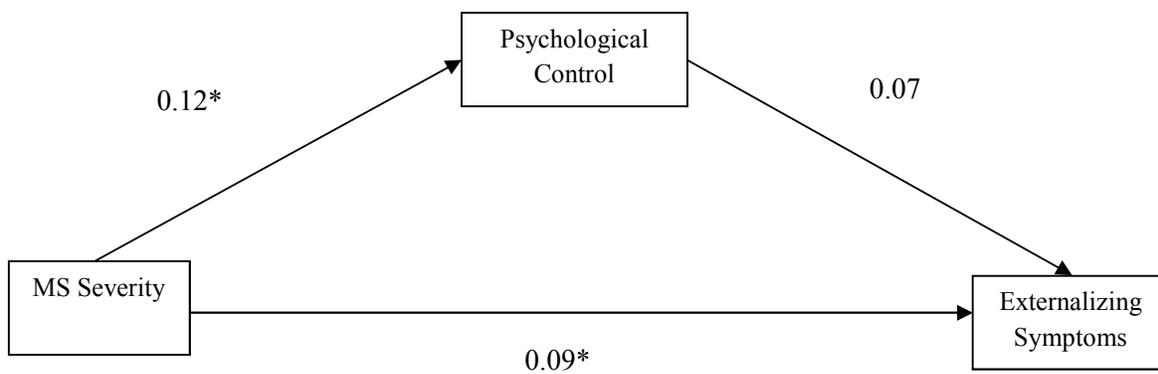


Figure 6: Diagram of simple mediation model with maternal MS severity predicting externalizing symptoms through psychological control using unstandardized coefficients.

Analyses of indirect associations were done to address Hypotheses 2, and the 95% confidence interval included zero for all mediation models with the exception of the model including maternal lax discipline predicting child internalizing symptoms (see Table 6). Specifically, there was no indirect association of MS symptom severity on internalizing or externalizing symptoms through maternal acceptance or psychological control; however, there was an indirect association of maternal MS symptom severity through maternal lax discipline predicting child internalizing symptoms, but not externalizing symptoms.

Table 6

Indirect Associations Between MS Severity and Child Outcome Through Parenting

Independent Variable	Dependent Variable	Indirect Variable/Mediator	Unstandardized Indirect Effect	95% Confidence Interval
Severity	CIS	Acceptance	0.01	-0.00 to 0.04
Severity	CIS	Lax Control	0.02*	0.00 to 0.06
Severity	CIS	Psych Control	0.01	-0.00 to 0.05
Severity	CES	Acceptance	0.09	-0.00 to 0.17
Severity	CES	Lax Control	0.01	-0.01 to 0.04
Severity	CES	Psych Control	0.01	-0.01 to 0.04

Note. CIP = Child Internalizing Symptoms; CEP = Child Externalizing Symptoms; Psych = Psychological

In order to examine Hypothesis 3, that there is an indirect association of maternal MS on child psychological functioning through both maternal depression and each of the negative parenting behaviors (i.e., maternal acceptance, lax control, and psychological control), it was

first necessary to determine if the two mediators (i.e., maternal depression and negative parenting) were associated after controlling for the independent variable (i.e., maternal MS severity; Hayes, 2013). Establishing if the two mediators are associated helps determine if the association between the mediators is accounted for by maternal MS severity. Partial correlations indicated that after controlling for MS symptom severity and maternal age, maternal depression was associated with maternal acceptance, $r(80) = -.32, p = .004$; lax control, $r(80) = .32, p = .003$; and psychological control, $r(80) = .32, p = .003$. Thus, it appears the association between depression and parenting is not only accounted for by maternal MS severity.

Consistent with analyses in hypothesis 2, before examining indirect associations it was first necessary to examine the direct effects of independent variables on dependent variables to fully examine the model. All direct associations are presented in Table 7 and in Figures 7 through 12, with maternal acceptance, lax control, and psychological control, respectively, predicting child internalizing symptoms first and externalizing symptoms second. Consistent with direct effects found in previous analyses, maternal MS symptom severity was consistently positively associated with maternal depressive symptoms across all models (see the first column of Table 7). Unlike the direct associations examined for Hypothesis 2, when maternal depressive symptoms were included in the model, maternal MS severity was not associated with maternal acceptance, lax control, or psychological control (see the second column of Table 7). Maternal depressive symptoms was negatively associated with maternal acceptance at a trend level but was not associated with either maternal lax control or psychological control (see the second column of Table 7). In addition, in the full model,

maternal depressive symptoms were not associated with either child internalizing or externalizing symptoms (see the third and fourth columns of Table 7). Only two associations were found between parenting behaviors and child outcomes. First, lax control was positively associated with internalizing symptoms at a trend level (see the middle of the third column of Table 7 and Figure 8). Second, maternal acceptance was negatively associated with externalizing symptoms (see the top of the first column of Table 7 and Figure 10).

As with Hypothesis 2, indirect associations were tested using a bias-corrected bootstrap confidence interval with 10,000 bootstrap samples, and a confidence interval that did not contain zero indicated support for Hypothesis 3. Indirect associations analyses were repeated for each parenting behavior (i.e., maternal acceptance, lax control, and psychological control) and each outcome (i.e., internalizing and externalizing symptoms) while also controlling for maternal age. Table 8 presents the unstandardized indirect effect of all double mediation models (i.e., MS severity predicting child outcomes through maternal depressive symptoms and parenting variables) with the top half presenting data for internalizing symptoms and the bottom half presenting data for externalizing symptoms. In examining indirect associations, results indicated the 95% confidence interval included zero for all indirect associations predicting internalizing symptoms, indicating no indirect associations were significant for internalizing symptoms. The only significant result was for the indirect association of maternal MS severity on child externalizing symptoms through maternal depressive symptoms and maternal acceptance (see the fourth section of Table 8).

Table 7

Model Coefficients for the Indirect Effects Model in Which Severity Predicts Outcomes Through Depressive Symptoms and Parenting Behaviors

	DVs							
	Depressive Sx		Maternal Acceptance		Internalizing Sx		Externalizing Sx	
IVs: Acceptance Model	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
Severity	0.43***	0.06	-0.00	0.12	0.04	0.05	0.10+	0.06
Depressive Sx	--	--	-0.32+	0.18	0.09	0.08	-0.03	0.09
Maternal Acceptance	--	--	--	--	-0.05	0.05	-0.12*	0.06
Maternal Age	-0.41*	0.16	-0.02	0.25	-0.11	0.11	-0.23+	0.12
<i>F</i>	31.81		1.93		2.89		3.58	
<i>R</i> ²	0.47***		0.08		0.14*		0.17*	
IVs: Lax Control Model	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
Severity	0.43***	0.06	0.07	0.07	0.03	0.05	0.09	0.06
Depressive Sx	--	--	0.15	0.11	0.09	0.08	-0.00	0.09
Lax Control	--	--	--	--	0.15+	0.08	0.06	0.10
Maternal Age	-0.41*	0.16	-0.02	0.15	-0.11	0.11	-0.22+	0.12
<i>F</i>	31.81		2.64		3.49		2.51	
<i>R</i> ²	0.47***		0.10*		0.17*		0.13*	
IVs: Psych Control Model	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
Severity	0.43***	0.06	0.07	0.07	0.04	0.05	0.09	0.06
Depressive Sx	--	--	0.13	0.11	0.10	0.08	-0.00	0.09
Psych Control	--	--	--	--	0.10	0.09	0.07	0.10
Maternal Age	-0.41*	0.16	-0.08	0.14	-0.10	0.11	-0.22+	0.12
<i>F</i>	31.81		2.60		2.96		2.56	
<i>R</i> ²	0.47***		0.10+		0.15*		0.13*	

Notes. + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$; IVs = Independent Variables, DVs = Dependent Variables, Psych = Psychological; Sx = Symptoms.

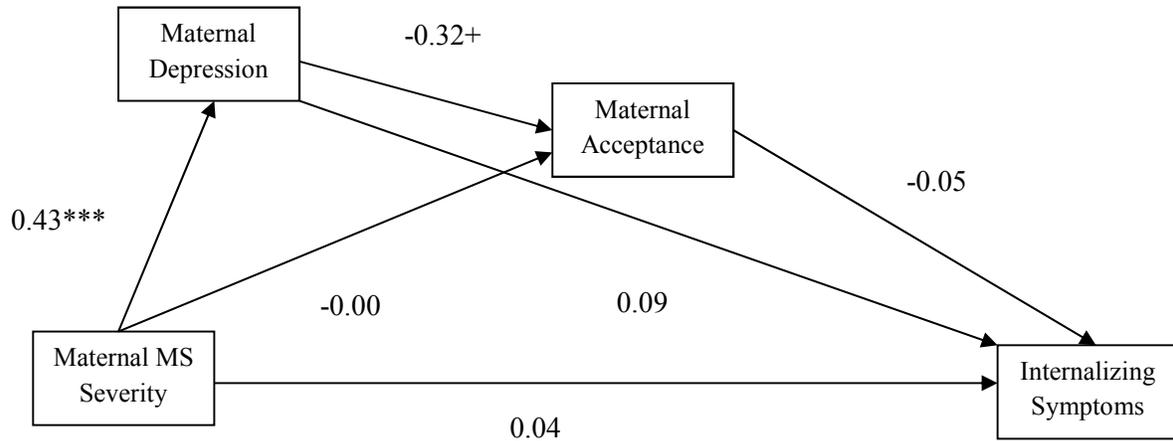


Figure 7: Path diagram of indirect effects model predicting internalizing symptoms through maternal depression and maternal acceptance using unstandardized coefficients.

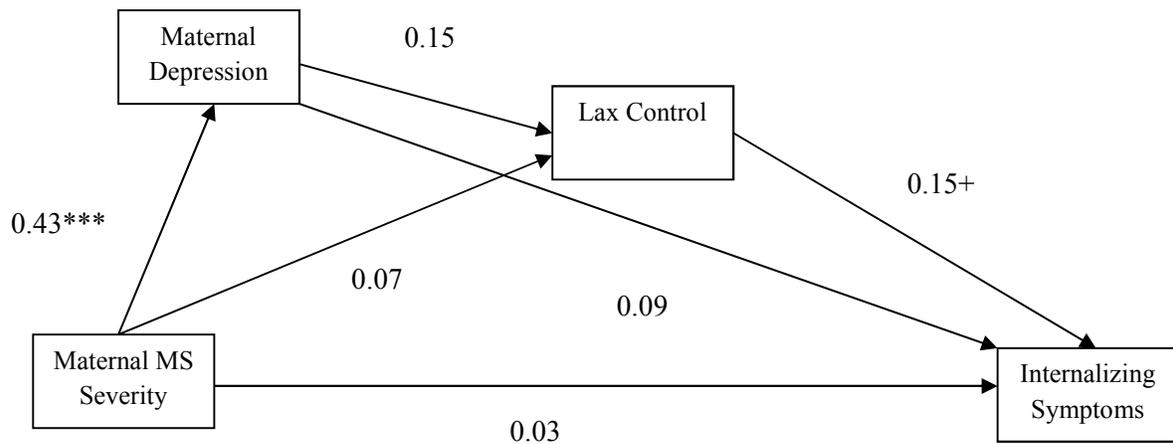


Figure 8: Path diagram of indirect effects model predicting internalizing symptoms through maternal depression and lax control using unstandardized coefficients.

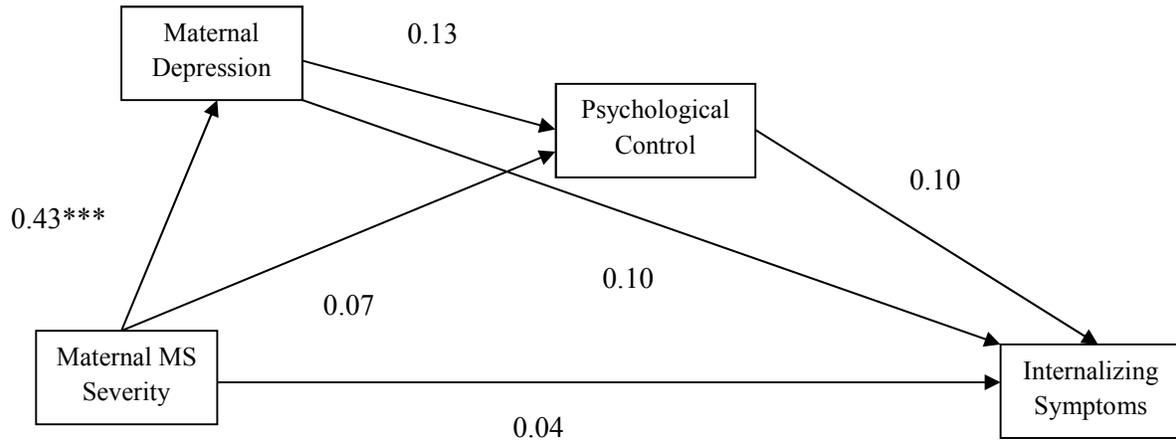


Figure 9: Path diagram of indirect effects model predicting internalizing symptoms through maternal depression and psychological control using unstandardized coefficients.

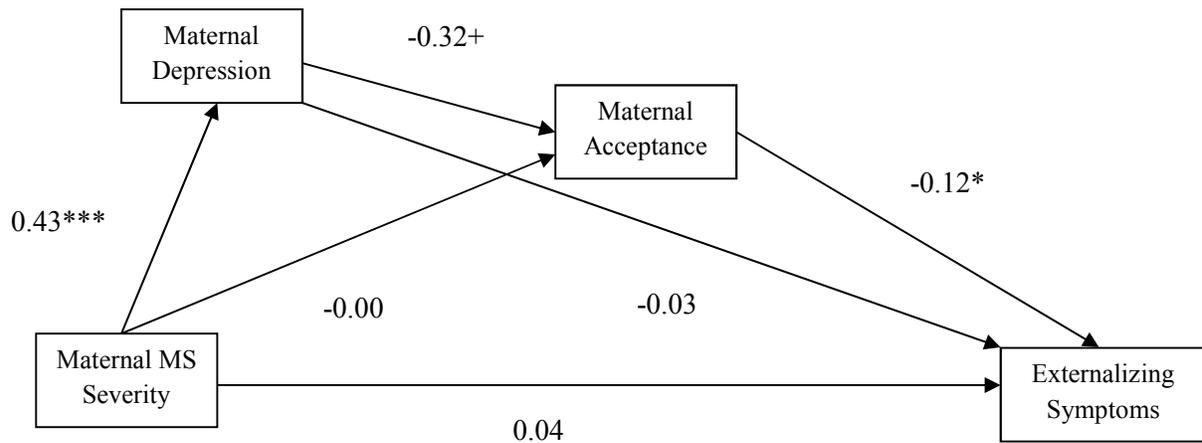


Figure 10: Path diagram of indirect effects model predicting externalizing symptoms through maternal depression and maternal acceptance using unstandardized coefficients.

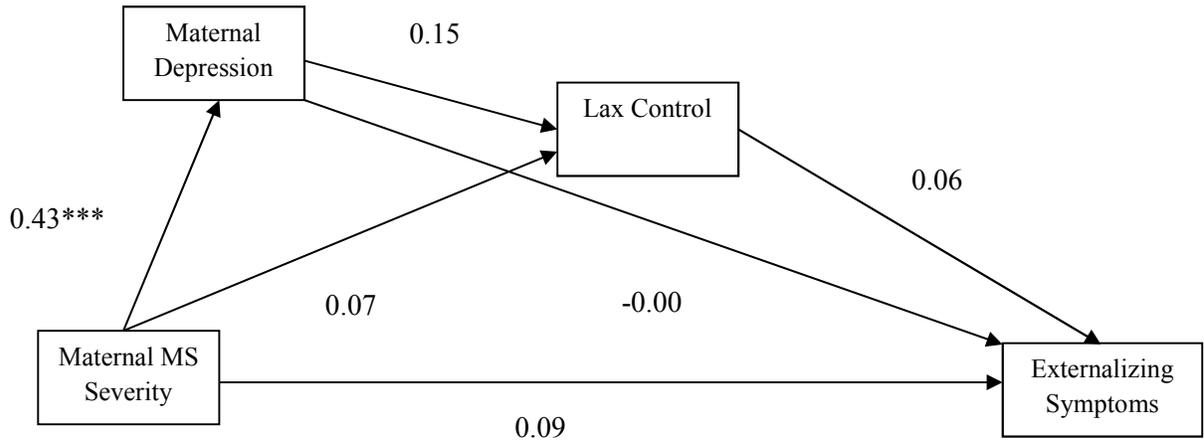


Figure 11: Path diagram of indirect effects model predicting externalizing symptoms through maternal depression and lax control using unstandardized coefficients.

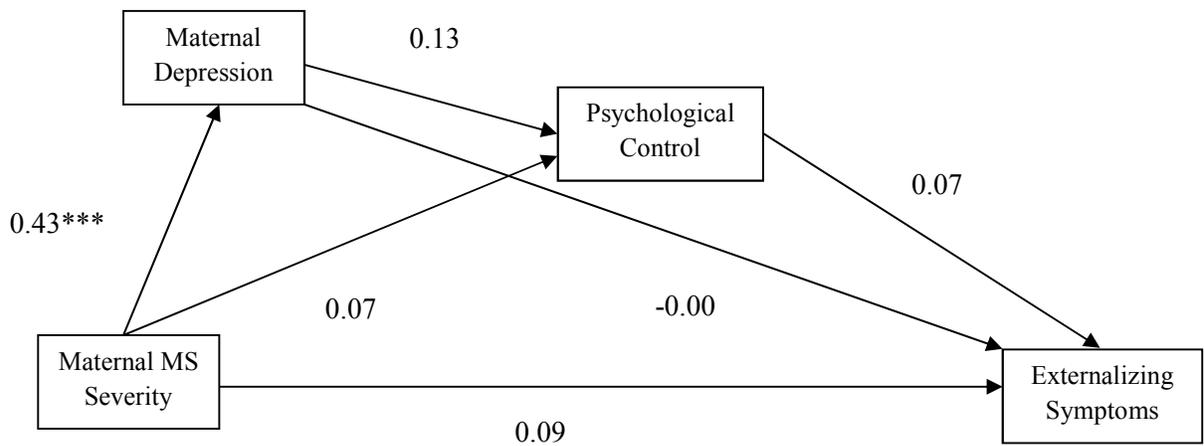


Figure 12: Path diagram of indirect effects model predicting externalizing symptoms through maternal depression and psychological control using unstandardized coefficients.

Table 8

Indirect Associations Between MS Severity and Child Outcomes Through Depressive Symptoms and Parenting

Independent Variable	Dependent Variable	Indirect Variable/Mediator 1	Indirect Variable/Mediator 2	Unstandardized Indirect Effect	95% Confidence Interval
Severity	CIS	DS	--	0.04	-0.02 to 0.13
Severity	CIS	DS	Acceptance	0.01	-0.00 to 0.04
Severity	CIS	Acceptance	--	0.00	-0.02 to 0.02
Total Effect	--	--	--	0.05	-0.02 to 0.14
Severity	CIS	DS	--	0.04	-0.02 to 0.12
Severity	CIS	DS	Lax Control	0.01	-0.00 to 0.05
Severity	CIS	Lax Control	--	0.01	-0.00 to 0.04
Total Effect	--	--	--	0.06	-0.01 to 0.15
Severity	CIS	DS	--	0.04	-0.02 to 0.13
Severity	CIS	DS	Psych Control	0.01	-0.00 to 0.03
Severity	CIS	Psych Control	--	0.01	-0.00 to 0.04
Total Effect	--	--	--	0.06	-0.01 to 0.15
Severity	CES	DS	--	-0.01	-0.10 to 0.08
Severity	CES	DS	Acceptance	0.02*	0.00 to 0.06
Severity	CES	Acceptance	--	0.00	-0.03 to 0.03
Total Effect	--	--	--	0.00	-0.09 to 0.10
Severity	CES	DS	--	-0.00	-0.10 to 0.10
Severity	CES	DS	Lax Control	0.00	-0.00 to 0.03
Severity	CES	Lax Control	--	0.00	-0.01 to 0.03
Total Effect	--	--	--	0.01	-0.08 to 0.11
Severity	CES	DS	--	-0.00	-0.10 to 0.10
Severity	CES	DS	Psych Control	0.00	-0.00 to 0.03
Severity	CES	Psych Control	--	0.00	-0.01 to 0.04
Total Effect	--	--	--	0.01	-0.08 to 0.10

Note. CIS = Child Internalizing Symptoms; CES = Child Externalizing Symptoms; Psych = Psychological; DS = Depressive Symptoms

After running the main analyses, exploratory post hoc analyses were conducted where the ordering of depression and MS severity in the double mediation model was reversed for all indirect effects analyses. While these data are cross-sectional, these post hoc analyses explore whether maternal depressive symptoms explains an indirect association between MS severity and parenting and child outcomes or whether this is better conceptualized as MS severity explaining an indirect association between maternal depressive symptoms and parenting and child outcomes. As with previous hypotheses, the post hoc indirect association was tested using a bias-corrected bootstrap confidence interval with 10,000 bootstrap samples, and a confidence interval that did not contain zero indicated significance. Indirect associations analyses were repeated for each parenting behavior (i.e., maternal acceptance, lax control, and psychological control) and each outcome (i.e., internalizing and externalizing symptoms) while also controlling for maternal age. Thus, unstandardized indirect associations were also computed with a 95% confidence interval. Direct associations for post hoc analyses are presented in Table 9 and Figures 13 through 18 and mirror the different effects already presented for the primary analyses. Specifically, depressive symptoms were positively associated with symptom severity across models (see the first column of Table 9), and depressive symptoms were negatively associated with maternal acceptance at a trend level but not other parenting dimensions (see the top of Table 9). Further, in the models with maternal acceptance (see the top of Table 9), maternal MS severity was positively associated with child externalizing symptoms at a trend level, and maternal acceptance was negatively associated with child externalizing symptoms. In the models including maternal lax control, lax control was positively associated with internalizing symptoms at a trend level; however,

Table 9

Model Coefficients for the Indirect Effects Model in Which Depressive Symptoms Predict Outcomes Through Severity and Parenting Behaviors

	DVs							
	Severity		Maternal Acceptance		Internalizing Sx		Externalizing Sx	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
IVs: Acceptance Model								
Depressive Sx	0.99***	0.14	-0.32+	0.18	0.10	0.08	-0.03	0.09
Severity	--	--	-0.00	0.12	0.04	0.05	0.10+	0.06
Maternal Acceptance	--	--	--	--	-0.05	0.05	-0.12*	0.06
Maternal Age	0.30	0.25	-0.02	0.25	-0.11	0.11	-0.23*	0.12
<i>F</i>	27.15		1.93		2.89		3.58	
<i>R</i> ²	0.43***		0.08		0.14*		0.17*	
IVs: Lax Control Model								
Depressive Sx	0.99***	0.14	0.14	0.11	0.09	0.08	-0.00	0.09
Severity	--	--	0.07	0.07	0.03	0.05	0.10	0.06
Lax Control	--	--	--	--	0.15+	0.08	0.06	0.10
Maternal Age	0.30	0.25	-0.02	0.15	-0.11	0.11	-0.22+	0.12
<i>F</i>	27.15		2.64		3.49		2.51	
<i>R</i> ²	0.43***		0.10+		0.17*		0.13*	
IVs: Psych Control Model								
Depressive Sx	0.99***	0.14	0.13	0.11	0.10	0.08	-0.00	0.09
Severity	--	--	0.07	0.07	0.04	0.05	0.09	0.06
Psych Control	--	--	--	--	0.10	0.09	0.07	0.10
Maternal Age	0.30	0.25	-0.08	0.15	-0.10	0.11	-0.22+	0.12
<i>F</i>	27.15		2.61		2.96		2.56	
<i>R</i> ²	0.43***		0.10+		0.15*		0.13*	

Notes. + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$; IVs = Independent Variables, DVs = Dependent Variables, Psych = Psychological; Sx = Symptoms.

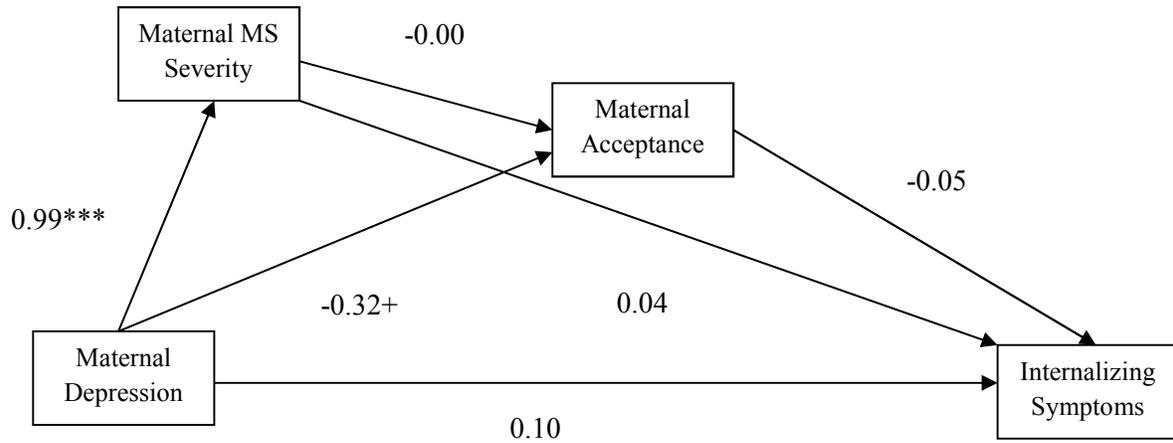


Figure 13: Path diagram of indirect effects model predicting internalizing symptoms switching severity and depression.

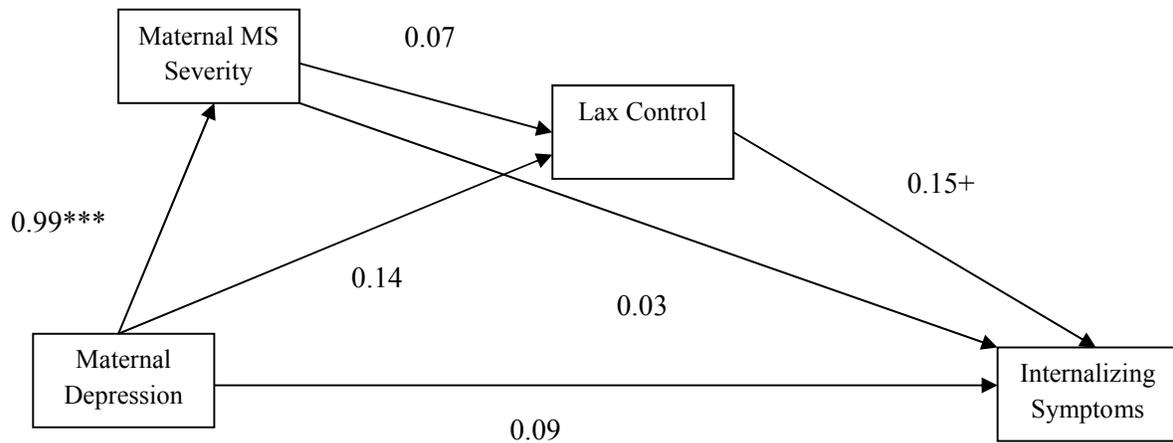


Figure 14: Path diagram of indirect effects model predicting internalizing symptoms switching severity and depression.

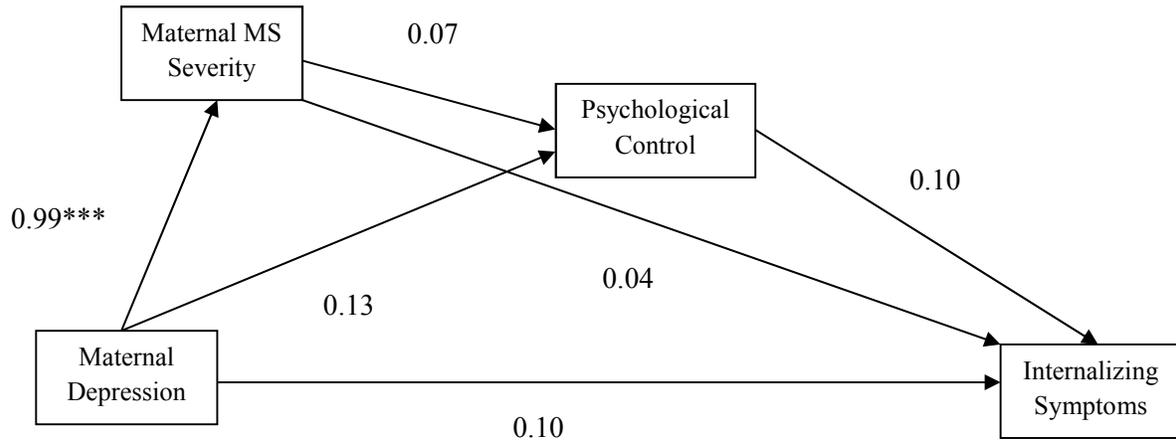


Figure 15: Path diagram of indirect effects model predicting internalizing symptoms switching severity and depression.

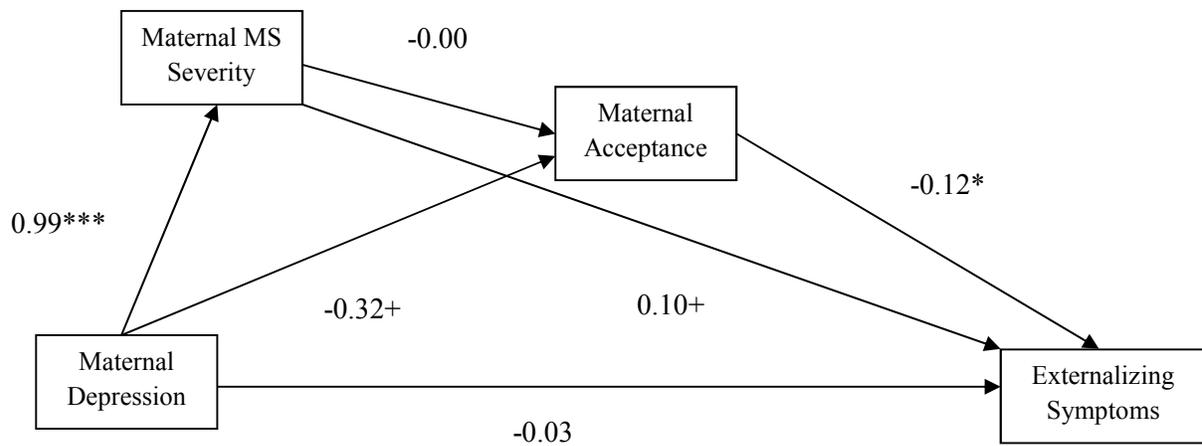


Figure 16: Path diagram of indirect effects model predicting externalizing symptoms switching severity and depression.

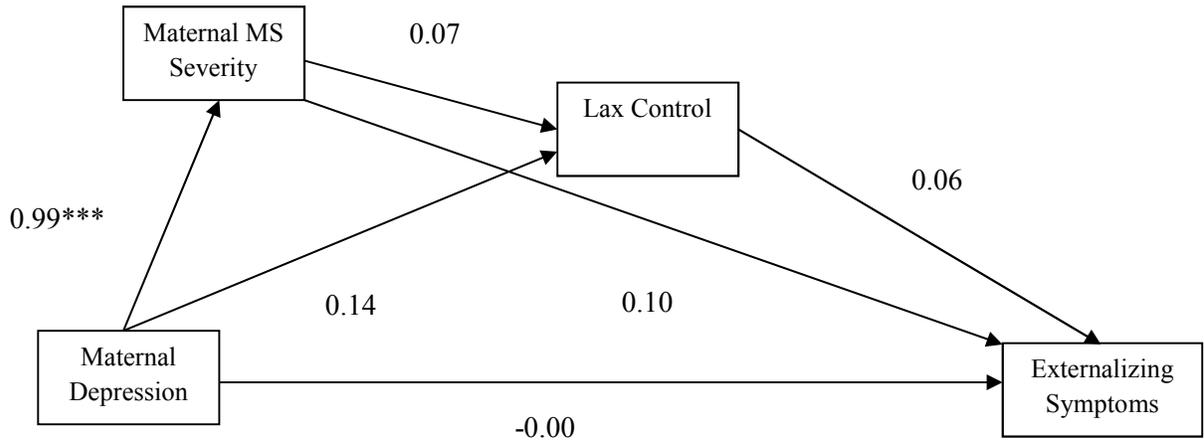


Figure 17: Path diagram of indirect effects model predicting externalizing symptoms switching severity and depression.

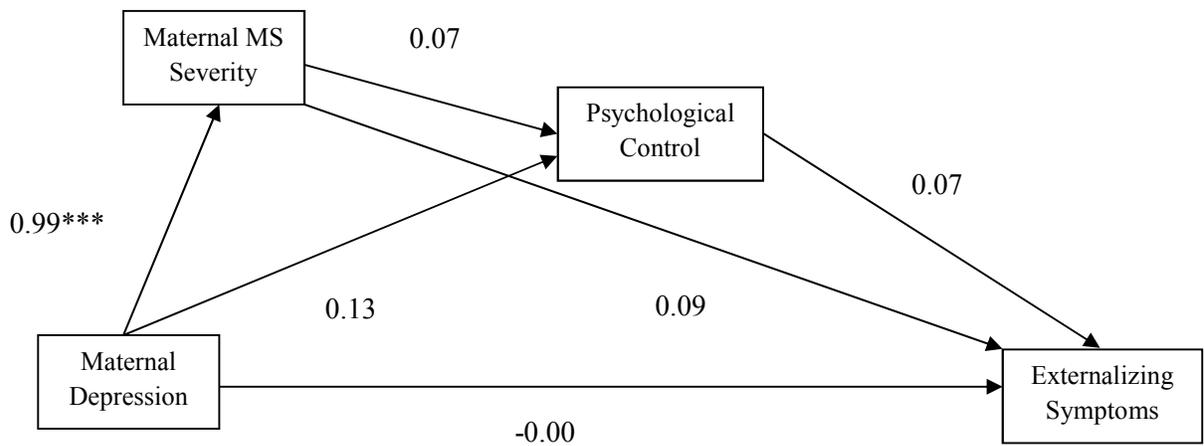


Figure 18: Path diagram of indirect effects model predicting externalizing symptoms switching severity and depression.

no predictors were significantly associated with child externalizing symptoms. Finally, in the maternal psychological control models, no predictors were significantly associated with either child internalizing or externalizing symptoms. With regard to indirect associations, all indirect associations predicting internalizing symptoms were not significant (i.e., all 95% confidence intervals contained zero; see Table 10). For externalizing symptoms, the only significant model included maternal acceptance but not MS severity. More specifically, the only significant indirect association was in the model in which depressive symptoms predicted child externalizing symptoms through maternal acceptance.

Table 10

Indirect Associations Between Maternal Depression and Child Outcomes Through MS Severity and Parenting

Independent Variable	Dependent Variable	Indirect Variable/Mediator 1	Indirect Variable/Mediator 2	Unstandardized Indirect Effect	95% Confidence Interval
DS	CIS	Severity	--	0.04	-0.07 to 0.14
DS	CIS	Severity	Acceptance	0.00	-0.02 to 0.02
DS	CIS	Severity	--	0.02	-0.01 to 0.08
Total Effect	--	--	--	0.06	-0.06 to 0.17
DS	CIS	Severity	--	0.03	-0.08 to 0.13
DS	CIS	Severity	Lax Control	0.01	-0.00 to 0.04
DS	CIS	Lax Control	--	0.02	-0.01 to 0.10
Total Effect	--	--	--	0.07	-0.05 to 0.17
DS	CIS	Severity	--	0.04	-0.07 to 0.14
DS	CIS	Severity	Psych Control	0.01	-0.00 to 0.03
DS	CIS	Psych Control	--	0.01	-0.01 to 0.06
Total Effect	--	--	--	0.05	-0.05 to 0.15
DS	CES	Severity	--	0.10	-0.01 to 0.22
DS	CES	Severity	Acceptance	0.00	-0.03 to 0.03
DS	CES	Acceptance	--	0.04*	0.00 to 0.12
Total Effect	--	--	--	0.11*	0.03 to 0.12
DS	CES	Severity	--	0.10	-0.02 to 0.24
DS	CES	Severity	Lax Control	0.00	-0.01 to 0.04
DS	CES	Lax Control	--	0.01	-0.01 to 0.07
Total Effect	--	--	--	0.11	-0.01 to 0.24
DS	CES	Severity	--	0.09	-0.02 to 0.22
DS	CES	Severity	Psych Control	0.00	-0.01 to 0.04
DS	CES	Psych Control	--	0.01	-0.01 to 0.06
Total Effect	--	--	--	0.11	-0.01 to 0.24

Note. CIS = Child Internalizing Symptoms; CES= Child Externalizing Symptoms; Psych = Psychological; DS = Depressive Symptoms

CHAPTER 4

DISCUSSION

The purpose of the current study was to more fully examine the relationship between maternal MS symptom severity and child psychological functioning, considering how parenting behaviors and maternal depressive symptoms may indirectly explain this association. Positive associations between MS symptom severity and child psychological functioning (i.e., internalizing and externalizing behaviors) were supported. However, few indirect associations were supported, although indirect pathways through maternal lax control predicting internalizing symptoms, depressive symptoms and maternal acceptance predicting externalizing symptoms, and maternal acceptance predicting externalizing symptoms were found. These findings and their implications for families impacted by MS are discussed below.

Maternal MS Severity and Child Outcomes

Results of the current study indicate maternal MS symptom severity is positively associated with both child internalizing and externalizing symptoms. The current study focuses only on mothers, and its findings support ample literature suggesting parental MS and CI negatively impact child psychological and social functioning (e.g., Bogosian et al., 2010; Pedersen & Revenson, 2005; Umberger, 2014). Qualitative research suggests the negative

impact of maternal MS severity may be a result of a variety of factors, including family tension, having less time to spend with friends, worrying about their parents' future, their parents having a negative emotional state, increased responsibilities (e.g., chores) due to their parents' difficulty engaging in them, and resentment (Bogosian et al., 2011; Turpin et al., 2008). Parenting may be one of the mechanisms through which MS severity impacts child psychological functioning.

MS Symptom Severity, Parenting, and Child Outcomes

Results from the current study partially supported the expected links between MS severity and parenting. More specifically, in the current study MS symptom severity was positively associated with mother lax and psychological control, but not maternal acceptance. This is consistent with previous research suggesting CI and chronic pain, a symptom of MS, are negatively associated with parenting behaviors (e.g., Pedersen & Revenson, 2005). Interestingly, chronic pain and fatigue were positively associated with lax or permissive parenting (Evans et al., 2006) and parental monitoring (White et al., 2009), respectively, which supports the finding in the current study that MS symptom severity is positively associated with lax control. There is no research specific to MS and its influence on parenting behaviors; however, qualitative research suggests parents with MS struggle to engage in everyday parenting tasks (e.g., transporting their children, motivating children to assist with housework; Pakenham et al., 2012), and children of parents with MS experience less family cohesion and more family conflict (Bogosian et al., 2010). The reason why MS severity is

associated with lax and psychological control but not maternal acceptance is unclear. It is possible that symptoms of MS are more likely to impact the parenting control dimensions, as physical limitations and fatigue associated with the disease may prohibit parents from setting and enforcing firm boundaries with their children. It is also possible parents with MS might use more psychological manipulation of their children to get them to follow their rules given their physical limitations. Maternal MS severity may not have a direct link with maternal acceptance because children may feel love and caring without minimal physical efforts by their mothers. However, it may be that when MS severity increases maternal depressive symptoms, this impacts the mother-child relationship and the child's sense of acceptance.

Results from the current study partially support previous research examining the association between parenting behaviors and child psychological functioning. Specifically, maternal acceptance was negatively associated with child externalizing and internalizing symptoms, though the latter association was only trending in significance. Positive associations were found between lax and psychological control and child internalizing symptoms, but not externalizing symptoms. Previous research suggests an established association between parenting behaviors and child psychological functioning, such that more negative aspects of parenting are associated with increased internalizing and externalizing symptoms (e.g., Barber et al., 2005; Maccoby, 2000; Shumow et al., 1998). However, the current study adds to the literature given there are no studies examining parenting by mothers with MS and how their parenting behaviors influence children's outcomes.

Further, the hypothesized indirect associations between MS severity and child outcomes (i.e., internalizing and externalizing symptoms) through parenting were partially

supported. Though most of the indirect associations through parenting were not significant, there was an indirect association between maternal MS severity and internalizing symptoms through maternal lax control. That is, greater MS severity was linked to more lax control, which in turn was linked to more internalizing symptoms in children. This finding is surprising given research suggesting lax control (i.e., the lack of limit setting and rule enforcing) is more strongly associated with child externalizing symptoms compared to internalizing symptoms, though the latter association exists (Barber et al., 2005). However, it helps explain how MS symptom severity is associated with internalizing symptoms in children. It is possible when mothers do not set and enforce limits for their children, the children are unaware of appropriate behaviors to regulate their emotions, which increases their internalizing symptoms. Though more firm control is associated with fewer externalizing symptoms in children (e.g., Pinquart, 2017), less lax parenting or more firm parenting may also be associated with feelings of increased safety in children, given rules and regulations are typically established to keep children safe and protect them from harm, which may be more related to internalizing symptoms compared to externalizing symptoms. Results of the current study support one previous study that found that there is an indirect effect of authoritarian parenting (i.e., high psychological and high behavioral control) on internalizing and externalizing symptoms in children (Evans et al., 2006).

MS Symptom Severity, Depression, Parenting, and Child Outcomes

Another possible mediator explored was maternal depression, in which it was hypothesized that the association between MS severity and child psychological functioning would be explained through maternal depressive symptoms and parenting behaviors, sequentially; however, only one indirect pathway with maternal depression was significant. Specifically, there was an indirect association of maternal depressive symptoms and maternal acceptance on the association between MS symptom severity and child externalizing symptoms. Research indicates parents diagnosed with a CI or MS are at increased risk for developing depression (Chwastiak et al., 2002; Voss et al., 2000), and research also supports the association between parental depression and poorer psychological functioning in their children (e.g., Gravener et al., 2012; Turney, 2011) and poorer parenting (e.g., Davenport et al., 1984; Downey & Coyne, 1990). Additionally, parenting behaviors (i.e., neglect, use of punishment, lower parenting satisfaction [Banyard et al., 2003]; authoritative parenting [Xu et al., 2014]) were found to mediate the relationship between depression and negative outcomes of children, and in individuals with MS, depression was found to impact child psychological functioning indirectly through family functioning (Pakenham & Cox, 2012).

Research suggests depressed parents are more likely to communicate with their children using flat speech, engage in fewer positive interactions, and are more irritable than non-depressed parents (Downey & Coyne, 1990). They also have been found to exhibit more irritability, hostility, and disengagement when interacting with their children (Lovejoy, Graczyk, O'Hare, & Neuman, 2000). Thus, it is possible that the way in which depression

influences parenting practices more heavily influences the parenting dimension of acceptance, as this dimension is defined as the extent to which parents demonstrate warmth, support, and love toward their children. Perhaps depression does not influence psychological control (i.e., the psychological manipulation of children) because it requires more effort to engage in controlling behaviors. It is surprising that parents who have more depressive symptoms did not report more lax control, in that they may not often have the energy to follow through on existing rules and discipline as needed. However, perhaps firm control (i.e., limit setting by parents) is something that is more consistent, and it is possible children may have learned expectations and rules prior to the mothers' diagnosis of MS (i.e., rules and expectations were established before mothers were diagnosed with MS). Further, it is conceivable that having a coparent without symptoms of depression might influence levels of psychological and lax control.

It is important to note that maternal MS symptom severity and maternal depressive symptoms were highly correlated. In post hoc analyses where symptom severity and depressive symptoms were switched in the model, the only indirect pathway that was significant between maternal depressive symptoms and externalizing symptoms was through maternal acceptance alone, not through MS severity and maternal acceptance. While these data are cross-sectional and limit our ability to interpret direction of effects, these post hoc analyses suggest depressive symptoms as the key construct that is driving how maternal MS severity is linked to maternal acceptance, not the other way around. Results also suggest maternal acceptance plays a role when mothers with MS have increased symptoms of depression.

Limitations and Future Research

The current study has multiple limitations that may contribute to the lack of findings. Most notably, the power to detect significant effects in the current study was minimal due to significant missing data and limited participation. While it is possible a larger sample size would be able to detect significant results that were not detected in the current study, G*Power (Faul et al., 2007; Faul et al., 2009) suggests there is enough power to detect significance for small to medium effects (i.e., standardized coefficients of 0.15 or above); a larger sample size would be needed to detect smaller effects. As there was enough power to detect small to medium effects, it is likely there are few significant findings. The lack of findings is likely due instead to participants in the current study being from generally higher functioning families. Other illnesses may have a greater impact on child functioning due to the pervasiveness of the chronic illness, though it is important to consider the complexity of MS and all other CIs when studying them (discussed below). Further, the cross-sectional design of the study makes it impossible to discuss causal relationships of significant associations and indirect associations. For example, though research and the current study support the association between parental MS and poorer psychological functioning in children, it is possible that having a child with increased psychological problems might lead parents to exhibit more symptoms of MS (i.e., more stress from having a child with psychological difficulties might cause a flare-up of symptoms of MS). Given this, the bidirectional nature of associations should be considered. For example, examining both

parent and child report longitudinally may be able to detect bidirectional influences. Further, longitudinal research would help determine whether the development of child internalizing and externalizing symptoms changes over time in the context of parental MS.

Sample characteristics may also limit the generalizability of the current study. To begin with, the current study only includes data from mothers diagnosed with MS and not fathers. It is possible results would be different in considering fathers. For example, fathers may be more or less impactful on child psychological functioning, compared to mothers, based on the amount of time a father spends caring for his children and the closeness of the relationship between the father and the child. It is also possible mothers who agreed to participate in the current study had presentations of MS that are less severe than individuals who chose not to participate. Specifically, 51% of participants in the current study did not know their type of MS diagnosis, whereas 48% reported being diagnosed with relapsing-remitting MS (RRMS), a less severe type of MS, and 1% reported being diagnosed with secondary-progressive MS (SPMS), a more severe type of MS. Research suggests approximately 80-90% of individuals are diagnosed with acute episodic symptoms followed by periods of remission (e.g., RRMS), while 10-20% experience a steady progression of symptom severity following the onset of the diagnosis (e.g., SPMS; Myhr, 2008). Thus, it is unlikely the sample in the current study is representative of clinical diagnoses of MS commonly found in the country. Further, given extensive missing data, analyses were conducted to determine differences between participants who completed the study and those who dropped out. These results indicated differential dropout such that those who did not complete the study reported more symptoms of depression, less acceptance, more lax

discipline, more psychological control, more severe symptoms of MS, and children with more severe internalizing and externalizing symptoms. Thus, the remaining sample included overall better functioning families than those who did not complete the study. Additionally, while participants were recruited through multiple venues across the United States, given the nature of data collection, it is almost impossible to determine whether generalization to a broader population can be made, given there is no information regarding where participants live. Future studies could potentially randomly select participants from existing lists of patients diagnosed with MS to obtain a more representative sample.

Methodological limitations are also present in the current study. First, measures were not randomized, which likely influenced the amount of missing data of particular constructs (e.g., child internalizing and externalizing symptoms). Additionally, though parent reports of child psychological functioning are commonly utilized in research, a multi-rater approach would likely increase the validity of child psychological functioning, particularly more internal aspects of child functioning (i.e., child internalizing symptoms). More specifically, given parents may have biased views of their children (e.g., in the case of parental depression that may negatively color parental views of child behavior) or not be able to evaluate symptoms of anxiety and depression in their children, obtaining child reports of their own functioning would likely more accurately assess their psychological functioning, particularly for internalizing symptoms. Teacher reports might also be utilized, as they may provide a different perspective on child behavior, that may differ across settings. For example, it is possible children with a parent with MS might attempt to suppress their internalizing and/or externalizing symptoms at home in order to not add increased stress to the family, and these

behaviors may be prominent at school. Conversely, it is possible there would be an increased incidence of child internalizing and externalizing symptoms at home compared to at school as a way of gaining more attention or due to difficulties with parenting and given the structure that exists at school.

The current study planned to examine how child gender moderates the association between MS symptom severity and internalizing and externalizing symptoms. However, due to an error in the data collection response options, where an answer was not required, many mothers did not report child gender. Therefore, future research may wish to examine how child gender influences the relationships examined in the current study. Specifically, differences in CI and MS literature suggest the importance of examining moderating variables that may impact the relationship between symptom severity and child internalizing and externalizing problems. For example, research has shown that daughters tend to cope better with parental MS than sons (Steck et al., 2001), whereas a more general review indicated daughters displayed greater maladjustment (Romer et al., 2002). Therefore, there is mixed evidence suggesting child gender may play an important role in the association between maternal MS severity and child psychological functioning and would be an important direction for future research. Furthermore, the current study did not examine how child age might influence the association between MS symptom severity and child psychological functioning. It is possible the impact of having a parent with MS on children might differ based on their developmental stage. For example, it is possible young children may display increased externalizing symptoms, whereas adolescents may display more internalizing symptoms. Though research supports the association between MS severity and child and

adolescent psychological functioning (e.g., Brandt & Weinert, 1998; Steck et al., 2007), research separating children by age and comparing their functioning accordingly is limited.

Though the results of the current study provide information about mechanisms through which MS symptom severity might influence child psychological functioning, it is important to consider the complexity of studying a disease like MS and its impact on family, parent, and child functioning. Specifically, among other things, considering the disease process would be helpful in future research. The timing of when the parent was diagnosed with MS and whether the child witnessed the parent's disease progression may be important to consider when examining these influences, a process that can only be examined over time. For example, if a parent is diagnosed with MS early in the child's life, the child may witness more of the progression of the parent's disease and may be impacted more negatively as the parent's functioning decreases over time; however, if a parent is diagnosed with MS later in life, it is possible children have more knowledge of what their parent's abilities were like before being diagnosed with MS, which may negatively influence the child's functioning. Other factors (e.g., child personality) may impact children's perception of a parent's ability to overcome the illness and subsequently influence their overall functioning. Marital status and the amount of spousal support provided to a parent diagnosed with MS should be considered, as these might influence symptom severity, child psychological functioning, and parental symptoms of depression. Marital status and spousal support may also directly influence child psychological functioning as the parent or caregiver not diagnosed with MS directly helps coparent the child.

Furthermore, differences in constructs may exist in a population such as parents with MS compared to parents in general. For example, lax parenting, a construct examined in the current study, may be different in these families. Specifically, parents with MS who have high scores on lax parenting may not have the ability to follow through with established rules and expectations due to physical limitations, and these scores may not reflect true apathy or permissiveness that may underlie high scores on lax parenting among mothers without MS. Thus, a child's understanding of why a parent might engage in more lax parenting may also influence the impact on child psychological functioning. Due to the complexity of these constructs, it may also be important to continue using multiple methods (i.e., qualitative and quantitative) to disentangle them and provide information for future studies. Overall, importance should be placed on examining the complexity of studying a disease such as MS, which can only be done with multiple studies over time.

Summary and Clinical Implications

Overall, the current study contributes to the body of CI and MS research by examining parenting and depression as potential mechanisms for explaining the relationships between MS symptom severity and child psychological functioning. Results indicate depressive symptoms, maternal acceptance and lax control partially explain child psychological functioning in the context of families with a mother experiencing MS. Specifically, children's internalizing symptoms seem to be explained by lax control directly, whereas externalizing symptoms were linked through maternal depressive symptoms and maternal acceptance.

Teaching mothers strategies for setting appropriate limits and following through with consequences (i.e., increasing firm control in mothers with MS) might improve child internalizing symptoms. Further, increasing the frequency of positive parenting behaviors associated with acceptance (e.g., increasing time spent talking to children, increasing warm interactions between parents and children) might improve child externalizing symptoms in the context of maternal MS and symptoms of depression. When working with mothers with MS who are also depressed, it may also be important to focus on this aspect of parenting and help mothers realize the importance of continuing to show affection to their children. Broadly, when working clinically with families where one parent is diagnosed with MS, it is important to consider the psychological functioning of the children as a place for intervention. Interventions focusing on these two areas may increase family functioning in the context of parental MS.

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APPENDICES

APPENDIX A
INFORMED CONSENT FORM

The purpose of this study is to examine how maternal MS, as well as parenting and parent relationships, may influence various aspects of child and adolescent psychological functioning. The knowledge gained from this study may help us understand how maternal MS impacts children in different ways throughout their childhood. It is important to research the impact MS has on children, as many women will face a diagnosis of MS in their lives, and having knowledge of how MS impacts children will help mothers and health professionals better understand how to help mothers cope with being a parent with MS.

You will be asked to fill out several questionnaires online, varying in length. It will take most people about 30-45 minutes to complete all of the questions. The questionnaires contain items asking about you, your background and the severity of your MS, information about how you feel about yourself, your interactions and relationships with the other adults responsible for your children and your children, and the psychological functioning of your children. There is the possibility that filling out these online questionnaires may evoke some upsetting thoughts or feelings associated with your past experiences with your illness or relationships with family members. You are reminded that your participation in this study is voluntary. This means that you can choose to stop at any time without penalty. Furthermore, you may choose to skip any particular item or section throughout this online survey.

All of the information collected will be kept confidential by the researchers. However, no guarantees can be made regarding the interception of data by unauthorized third parties when data is sent via the Internet. This study utilizes Qualtrics to collect your responses and your data will be stored on their servers during the data collection phase. Qualtrics protects the privacy of your responses as you can see in their online documentation at <http://www.qualtrics.com/privacy-statement/> and <http://www.qualtrics.com/security-statement/>. Once data is transferred off of Qualtrics it will be stored on password protected computers in a locked research lab, which only Emily Stewart, her research mentor, Dr. Laura Pittman, and her research team can access. Any presentations, reports, or publications based on the data collected in this study will use group data only and will never give details associated with a specific participant.

For your participation in this research project today, you will be entered in a drawing for a chance to earn one \$100. Additionally, all parents will be provided with parenting resources specific to the difficulties of parenting while being diagnosed with a CI.

If you have any questions or concerns related to your participation in this study, please call Emily Stewart, Department of Psychology at 815-753-5971 or Dr. Laura Pittman at 815-753-2485. Any questions about your rights as a research participant can be addressed to the NIU Office of Research Compliance (815-753-8588).

By clicking on the button below, you are indicating you have read the information about the study and have been informed of its general purpose. You are indicating you are fully aware of the risks and benefits associated with participating in the study described to you. If you

would like a copy of this consent, please print this page now before proceeding. If you do not wish to participate in this study, please exit out of the survey.

APPENDIX B
DEBRIEFING FORM

Thank you for participating in the Mothers with MS Study. We appreciate the time that you took answering the questions about yourself and your family. We recognize that for some of you these questions may have brought up some upsetting thoughts or feelings. If you would like to seek out counseling, the following two resources are available nation-wide online and via telephone:

GoodTherapy.org

Helping people find therapists & advocating for ethical therapy
<http://www.goodtherapy.org/>

National Suicide Prevention Lifeline

Suicide prevention & Crisis Hotline
<http://www.suicidepreventionlifeline.org/about.aspx>
1-800-273-8255

Good Therapy.org is an online resource that can be used to locate therapists nation-wide. Please visit the website for more information. The National Suicide Prevention Lifeline is a 24-hour, toll-free, confidential crisis hotline that is available for anyone in an emotional crisis. Call the toll-free number or visit their website for more information.

The purpose of this study is to better understand how having a mother diagnosed with MS plays a role in the psychological functioning of their children. It is hypothesized that children whose mothers are diagnosed with MS will have poorer mental health outcomes than children of healthy mothers. Specifically, more severe presentations of MS will likely result in poorer child psychological functioning. This relationship might operate through levels of maternal depression and parenting behaviors associated with having a diagnosis of a chronic illness. In addition, certain aspects of parent-coparent relationships will likely be a protective factor for children and adolescents who experience maternal MS in that they may act as a buffer against the negative consequences of having a mother diagnosed with a chronic illness. If you would like to receive a summary of the results after the current study is complete, or if you have any questions about the study, please contact Emily Stewart at 815-753-5971 or at stewart.emilye@gmail.com.

APPENDIX C
DEMOGRAPHICS FORM

Please fill in or check the space that best answers each question.

1. How old are you? _____ years
2. Are you male or female? _____ Male _____ Female
3. Please provide the following information about yourself and your family:

A. Which of the following groups best describes you?

- ____ Aleut, Eskimo or American Indian
- ____ Asian or Pacific Islander
- ____ Latino/Latina or Hispanic
- ____ Black
- ____ White/Caucasian
- ____ Other (please specify): _____

B. What is the highest level of schooling you have completed?

- ____ Completed grade school or less
- ____ Some high school
- ____ Completed high school
- ____ Some college
- ____ Completed college
- ____ Graduate or professional school after college
- ____ Don't know, or does not apply

C. What do you do for a living?

D. Where do you work (company or type of employment)?

E. What is your employment status?

- ____ Full-time employee
- ____ Half-time employee
- ____ Part-time employee

Unemployed

F. How many hours do you work per week?

4. Is there someone like a father or another mother to your child in your household?

Yes No

A. If yes, what is this person's relationship to your child?

Biological father

Stepfather

Mother's boyfriend

Grandfather

Mother

Other: please list _____

B. What is the highest level of schooling this person has completed?

Completed grade school or less

Some high school

Completed high school

Some college

Completed college

Graduate or professional school after college

Don't know, or does not apply

C. What does this person do for a living?

D. Where does he /she work (company or type of employment)?

E. What is his/her employment status?

- Full-time employee
- Half-time employee
- Part-time employee
- Unemployed

F. How many hours does this person work per week?

G. Which of the following groups best describes this person?

- Aleut, Eskimo or American Indian
- Asian or Pacific Islander
- Latino/Latina or Hispanic
- Black
- White/Caucasian
- Other (please specify): _____

H. Is this the person that helps you parent the most?

- Yes No

5. Is there another individual like a mother/father to your child in your household?

- Yes No

A. If yes, what is this person's relationship to you?

- Biological mother
- Stepmother
- Father's girlfriend
- Grandmother
- Biological father
- Stepfather
- Mother's boyfriend
- Grandfather

___ Other: please list _____

B. If yes, what is this person's relationship to your child?

___ Biological father

___ Stepfather

___ Mother's boyfriend

___ Grandfather

___ Other: please list _____

C. What is the highest level of schooling this person has completed?

___ Completed grade school or less

___ Some high school

___ Completed high school

___ Some college

___ Completed college

___ Graduate or professional school after college

___ Don't know, or does not apply

D. What does this person do for a living?

E. What is this person's employment status?

___ Full-time employee

___ Half-time employee

___ Part-time employee

___ Unemployed

F. Where does he/she work (company or type of employment)?

G. Is this the person that helps you parent the most?

Yes No

6. Is there another individual like a mother/father to your child NOT in your household?

Yes No

A. If yes, what is this person's relationship to you?

Biological mother

Stepmother

Father's girlfriend

Grandmother

Biological father

Stepfather

Mother's boyfriend

Grandfather

Other: please list _____

B. If yes, what is this person's relationship to your child?

Biological father

Stepfather

Mother's boyfriend

Grandfather

Other: please list _____

C. What is the highest level of schooling this person has completed?

Completed grade school or less

Some high school

Completed high school

Some college

- Completed college
- Graduate or professional school after college
- Don't know, or does not apply

D. What does this person do for a living?

E. What is this person's employment status?

- Full-time employee
- Half-time employee
- Part-time employee
- Unemployed

F. Where does he/she work (company or type of employment)?

G. Is this the person that helps you parent the most?

- Yes No

7. What is the status of your relationship with your child(ren)'s biological father?

- Married
- Divorced/Separated
- Living Together, Not Married
- Never Married, Not Living Together
- Other (Please Specify)

A. If you are divorced/separated from your child(ren)'s biological father, do you share caregiving responsibilities?

- Yes No

B. Please describe the caregiving arrangement.

C. If you are not married to your child(ren)'s biological father, what is your current marital status?

- Married
- Divorced/Separated

Living Together, Not Married

Other (Please Specify)

8. What is the zip code of the area in which you currently live? _____

9. Is this area considered (mark one)...

Urban

Suburban

Rural

10. What type of MS are you diagnosed with?

Relapsing-Remitting MS (RRMS)

Secondary-Progressive MS (SPMS)

Primary-Progressive MS (PPMS)

Progressive-Relapsing MS (PRMS)

Unknown

Other (please describe)

11. Are you currently receiving treatment for MS symptoms?

Yes No

A. If yes, what treatments are you receiving?

Please list: _____

12. Do you have adequate resources to meet your healthcare needs?

Yes No

13. In what year were you diagnosed with MS? _____

14. Have you ever been diagnosed with a Major Depressive Episode?

___ Yes ___ No

Please fill in the following information in the space provided.

15. Please list the initials, gender, and ages of your children:

<u>Initials</u>	<u>Gender (circle)</u>	<u>Age</u>
1. _____	Male / Female	_____
2. _____	Male / Female	_____
3. _____	Male / Female	_____
4. _____	Male / Female	_____
5. _____	Male / Female	_____
6. _____	Male / Female	_____

16. Are you the child(ren)'s primary caregiver?

___ Yes ___ No

A. If no, describe the current caregiving situation: _____

17. Approximately how many hours do you care for your child each day? _____

18. Have any of your children been diagnosed with a mental, physical, or cognitive disability?

___ Yes ___ No

B. If yes, what is this disability? _____

C. If yes, was the child you answered questions about throughout the survey the child with a disability? _____

19. Of the children you listed, please put them in alphabetical order by first name. What are the initials of your child on your list who is between the ages of 6 and 18 and whose initials are closest to the beginning of the alphabet? _____

Please respond to all further questions about the child you listed above.

APPENDIX D
MULTIPLE SCLEROSIS QUALITY OF LIFE

INSTRUCTIONS:

This survey asks about your health and daily activities. *Answer each question* by selecting the appropriate number (1, 2, 3, ...).

If you are unsure about how to answer a question, please give the best answer you can.

1. In general would you say your health is¹:

(select one number)

Excellent.....1
 Very good.....2
 Good.....3
 Fair.....4
 Poor.....5

2. *Compared to one year ago*, how would you rate your health in general *now*²?

(select one number)

Much better now than one year ago.....1
 Somewhat better now than one year ago...2
 About the same.....3
 Somewhat worse now than one year ago...4
 Much worse now than one year ago.....5

3-12. The following questions are about activities you might do during a typical day. Does ***your health*** limit you in these activities? If so, how much?

(Circle 1, 2, or 3 on each line)

	Yes, limited a lot	Yes, limited a little	No, not limited at all
3. <i>Vigorous activities</i> , such as running, lifting heavy objects, participating in strenuous sports ³	1	2	3
4. <i>Moderate activities</i> , such as moving a table, pushing a vacuum cleaner, bowling, or playing golf ³	1	2	3
5. Lifting or carrying groceries ³	1	2	3
6. Climbing <i>several</i> flights of stairs ³	1	2	3
7. Climbing <i>one</i> flight of stairs ³	1	2	3
8. Bending, kneeling, or stooping ³	1	2	3
9. Walking <i>more than a mile</i> ³	1	2	3
10. Walking <i>several blocks</i> ³	1	2	3
11. Walking <i>one block</i> ³	1	2	3
12. Bathing and dressing yourself ³	1	2	3

13-16. During the ***past 4 weeks***, have you had any of the following problems with your work or other regular daily activities ***as a result of your physical health?***

(Circle one number on each line)

	YES	NO
13. Cut down on the <i>amount of time</i> you could spend on work or other activities ⁴	1	2
14. <i>Accomplished less</i> than you would like ⁴	1	2
15. Were limited in the <i>kind</i> of work or other activities ⁴	1	2
16. Had <i>difficulty</i> performing the work or other activities ⁴	1	2

17-19. During the *past 4 weeks*, have you had any of the following problems with your work or other regular daily activities *as a result of any emotional problems* (such as feeling depressed or anxious).

(Circle one number on each line)

	YES	NO
17. Cut down on the <i>amount of time</i> you could spend on work or other activities ⁵	1	2
18. <i>Accomplished less</i> than you would like ⁵	1	2
19. Didn't do work or other activities as <i>carefully</i> as usual ⁵	1	2

20. During the *past 4 weeks*, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors or groups⁶?

(select one number)

- Not at all.....1
 Slightly.....2
 Moderately.....3
 Quite a bit.....4
 Extremely.....5

21. How much *bodily* pain have you had during the *past 4 weeks*⁷?

(select one number)

- None.....1
 Very mild.....2
 Mild.....3
 Moderate.....4
 Severe.....5
 Very severe.....6

22. During the *past 4 weeks*, how much did *pain* interfere with your normal work (including both work outside the home and housework)⁷?

(select one number)

- Not at all.....1
 A little bit.....2
 Moderately.....3
 Quite a bit.....4
 Extremely.....5

23-32. These questions are about how you feel and how things have been with you **during the past 4 weeks**. For each question, please give the one answer that comes closest to the way you have been feeling.

How much of the time during the **past 4 weeks**...

(Select one number on each line)

	All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time
23. Did you feel full of pep ⁸ ?	1	2	3	4	5	6
24. Have you been a very nervous person ⁹ ?	1	2	3	4	5	6
25. Have you felt so down in the dumps that nothing could cheer you up ⁹ ?	1	2	3	4	5	6
26. Have you felt calm and peaceful ⁹ ?	1	2	3	4	5	6
27. Did you have a lot of energy ⁸ ?	1	2	3	4	5	6
28. Have you felt downhearted and blue ⁹ ?	1	2	3	4	5	6
29. Did you feel worn out ⁸ ?	1	2	3	4	5	6
30. Have you been a happy person ⁹ ?	1	2	3	4	5	6
31. Did you feel tired ⁸ ?	1	2	3	4	5	6
32. Did you feel rested on waking in the morning ⁸ ?	1	2	3	4	5	6

33. During the *past 4 weeks*, how much of the time has your *physical health or emotional problems* interfered with your social activities (like visiting with friends, relatives, etc.)^{6?}

(select one number)

- Not at all.....1
 A little bit.....2
 Moderately.....3
 Quite a bit.....4
 Extremely.....5

Health in General

34-37. How TRUE or FALSE is *each* of the following statements for you.

(Select one number on each line)

	Definitely true	Mostly true	Not sure	Mostly false	Definitely false
34. I seem to get sick a little easier than other people ¹	1	2	3	4	5
35. I am as healthy as anybody I know ¹	1	2	3	4	5
36. I expect my health to get worse ¹	1	2	3	4	5
37. My health is excellent ¹	1	2	3	4	5

Health Distress

38-41. How much of the time during the *past 4 weeks*...

(Select one number on each line)

	All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time
38. Were you discouraged by your health problems ^{10?}	1	2	3	4	5	6
39. Were you frustrated about your health ^{10?}	1	2	3	4	5	6
40. Was your health a worry in your life ^{10?}	1	2	3	4	5	6
41. Did you feel weighed down by your health problems ^{10?}	1	2	3	4	5	6

Cognitive function42-45. How much of the time during the *past 4 weeks*...

(Select one number on each line)

	All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time
42. Have you had difficulty concentrating and thinking ¹¹ ?	1	2	3	4	5	6
43. Did you have trouble keeping your attention on an activity for long ¹¹ ?	1	2	3	4	5	6
44. Have you had trouble with your memory ¹¹ ?	1	2	3	4	5	6
45. Have others, such as family members or friends, noticed that you have trouble with your memory or problems with your concentration ¹¹ ?	1	2	3	4	5	6

Sexual function

46-49. The next set of questions are about your sexual function and your satisfaction with your sexual function. Please answer as accurately as possible about your function *during the last 4 weeks only*.

How much of a problem was each of the following for you *during the past 4 weeks*?

(Select one number on each line)

Men	Not a problem	A little of a problem	Somewhat of a problem	Very much a problem
46. Lack of sexual interest ¹²	1	2	3	4
47. Difficulty getting or keeping an erection ¹²	1	2	3	4
48. Difficulty having orgasm ¹²	1	2	3	4
49. Ability to satisfy sexual partner ¹²	1	2	3	4

(Select one number on each line)

Women	Not a problem	A little of a problem	Somewhat of a problem	Very much a problem
46. Lack of sexual interest ¹²	1	2	3	4
47. Inadequate lubrication ¹²	1	2	3	4
48. Difficulty having orgasm ¹²	1	2	3	4
49. Ability to satisfy sexual partner ¹²	1	2	3	4

50. Overall, how satisfied were you with your sexual function *during the past 4 weeks*¹³?

(select one number)

- Very satisfied.....1
- Somewhat satisfied.....2
- Neither satisfied nor dissatisfied.....3
- Somewhat dissatisfied.....4
- Very dissatisfied.....5

51. During the *past 4 weeks*, to what extent have problems with your bowel or bladder function interfered with your normal social activities with family, friends, neighbors, or groups⁶?

(select one number)

- Not at all.....1
- Slightly.....2
- Moderately.....3
- Quite a bit.....4
- Extremely.....5

52. During the *past 4 weeks*, how much did *pain* interfere with your enjoyment of life⁷?

(select one number)

- Not at all.....1
- Slightly.....2
- Moderately.....3
- Quite a bit.....4
- Extremely.....5

QUALITY OF LIFE

53. Overall, how would you rate your own quality-of-life¹⁴?

Select one number on the scale below:

10	9	8	7	6	5	4	3	2	1
Best possible quality-of-life									Worst possible quality-of-life <i>As bad as or worse than being dead</i>

54. Which best describes how you feel about your life as a whole¹⁴? (Circle one number)

- Terrible.....1
- Unhappy.....2
- Mostly dissatisfied.....3
- Mixed – about equally satisfied and dissatisfied...4
- Mostly satisfied.....5
- Pleased.....6
- Delighted.....7

¹Indicates this item is a part of the Health Perception Subscale

²Indicates this item is a part of the Change in Health Subscale

³Indicates this item is a part of the Physical Health Subscale

⁴Indicates this item is a part of the Role Limitations Due to Physical Problems Subscale

⁵Indicates this item is a part of the Role Limitations Due to Emotional Problems Subscale

⁶Indicates this item is a part of the Social Functioning Subscale

⁷Indicates this item is a part of the Pain Subscale

⁸Indicates this item is a part of the Energy Subscale

⁹Indicates this item is a part of the Emotional Well-Being Subscale

¹⁰Indicates this item is a part of the Health Distress Subscale

¹¹Indicates this item is a part of the Cognitive Functioning Subscale

¹²Indicates this item is a part of the Sexual Functioning Subscale

¹³Indicates this item is a part of the Satisfaction with Sexual Functioning Subscale

¹⁴Indicates this item is a part of the Overall Quality of Life Subscale

APPENDIX E

CENTER FOR EPIDEMIOLOGIC STUDIES DEPRESSION SCALE

Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past week.

	During the Past Week			
	Rarely or none of the time (Less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
1. I was bothered by things that usually don't bother me.				
2. I did not feel like eating; my appetite was poor.				
3. I felt that I could not shake off the blues even with help from my family or friends.				
4. I felt I was just as good as other people.				
5. I had trouble keeping my mind on what I was doing.				
6. I felt depressed.				
7. I felt that everything I did was an effort.				
8. I felt hopeful about the future.				
9. I thought my life had been a failure.				

10. I felt fearful.				
11. My sleep was restless.				
12. I was happy.				
13. I talked less than usual.				
14. I felt lonely.				
15. People were unfriendly.				
16. I enjoyed life.				
17. I had crying spells.				
18. I felt sad.				
19. I felt that people dislike me.				
20. I could not get "going."				

APPENDIX F

PARENT REPORT OF PARENT BEHAVIOR INVENTORY

Instructions: We would like to learn more about how you and your CHILD (or STEPCHILD) get along.

Read each of the statements below. If you think the statement is:

JUST LIKE you, circle a 3 next to it

A LITTLE LIKE you, circle a 2 next to it

NOT AT ALL LIKE you, circle a 1 next to it

1.	I make my child feel better after talking over his/her worries with me ¹ .	1	2	3
2.	I like to talk with and be with my child much of the time ¹ .	1	2	3
3.	I am easy with my child ² .	1	2	3
4.	I see my child's good points more than his/her faults ¹ .	1	2	3
5.	I feel hurt when my child doesn't follow my advice ³ .	1	2	3
6.	I usually don't find out about my child's misbehavior ² .	1	2	3
7.	I worry about how my child will turn out, because I take anything bad my child does seriously ³ .	1	2	3
8.	I almost always speak to my child with a warm and friendly voice ¹ .	1	2	3
9.	I am always thinking of things that will please my child ¹ .	1	2	3
10.	I let my child off easy when he/she does something wrong ² .	1	2	3
11.	I understand my child's problems and worries ¹ .	1	2	3
12.	I think my child is not grateful when he/she doesn't do what I want ³ .	1	2	3
13.	I don't pay much attention to my child's misbehavior ² .	1	2	3
14.	I don't trust my child again if he/she breaks a promise ³ .	1	2	3
15.	I enjoy talking things over with my child ¹ .	1	2	3
16.	I give my child a lot of care and attention ¹ .	1	2	3
17.	I can't say no to anything my child says ² .	1	2	3
18.	I enjoy going on drives, trips, or visits with my child ¹ .	1	2	3
19.	I feel hurt by the things my child does ³ .	1	2	3

20.	I say to my child that someday that he/she will be punished for his/her bad behavior ³ .	1	2	3
21.	I don't insist that my child do his/her homework ² .	1	2	3
22.	I smile at my child very often ¹ .	1	2	3
23.	I often give up something to get something for my child ¹ .	1	2	3
24.	I excuse my child's bad behavior ² .	1	2	3
25.	I am able to make my child feel better when he/she is upset ¹ .	1	2	3
26.	I tell my child how much I have suffered for him/her ³ .	1	2	3
27.	I think and talk about things my child has done wrong long after it is over ³ .	1	2	3
28.	I don't check up to see whether my child has done what I told him/her ² .	1	2	3
29.	I enjoy doing things with my child ¹ .	1	2	3
30.	I make my child feel like the most important person in the world ¹ .	1	2	3
31.	I let my child stay up late if he/she keeps asking ² .	1	2	3
32.	I enjoy working with my child in the house or yard ¹ .	1	2	3
33.	I seldom insist that my child do anything ² .	1	2	3
34.	I comfort my child when he/she is afraid ¹ .	1	2	3
35.	I enjoy staying at home with my child more than going out with my friends ¹ .	1	2	3
36.	I do not insist my child obey if he/she complains or protests ² .	1	2	3
37.	I cheer my child up when he/she is sad ¹ .	1	2	3
38.	I tell my child about all of the things that I have done for him/her ³ .	1	2	3
39.	I think that any misbehavior by my child is very serious and will have future consequences ³ .	1	2	3
40.	I do not bother to enforce rules ² .	1	2	3
41.	I often think of the good things that my child does ¹ .	1	2	3

42.	I make my life center about my children ¹ .	1	2	3
43.	I can be talked out of an order if my child complains ² .	1	2	3
44.	I have a good time at home with my child ¹ .	1	2	3
45.	I say that if my child really cared for me, he/she would not do things that cause me to worry ³ .	1	2	3
46.	I say that sooner or later we always pay for bad behavior ³ .	1	2	3
47.	I let my child get away without doing work he/she has been given to do ² .	1	2	3
48.	I am proud of the things my child does ¹ .	1	2	3
49.	I spend almost all of my free time with my child ¹ .	1	2	3
50.	I can be talked into things easily ² .	1	2	3
51.	I'm not interested in changing my child, but like him/her as he/she is ¹ .	1	2	3
52.	I say that my child is not grateful for all I have done for him/her when he/she doesn't do as I want ³ .	1	2	3
53.	I let my child get away with a lot of things ² .	1	2	3
54.	I talk to my child again and again about anything bad he/she does ³ .	1	2	3
55.	I say that if he/she loved me, my child would do what I want him/her to do ³ .	1	2	3
56.	I don't let my child decide things for him/herself ³ .	1	2	3

¹Indicates this item is a part of the Acceptance versus Rejection Scale

²Indicates this item is a part of the Firm versus Lax Control Scale

³Indicates this item is a part of the Psychological Autonomy versus Control Scale