AN EXPLORATION OF THE FAMILIAL RISK PROFILES OF KINDERGARTEN STUDENTS AND LATER ACADEMIC AND BEHAVIOR PROBLEMS

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By

ELISE N. HENDRICKER

Dr. Cheryl Offutt, Dissertation Supervisor

Dr. Wendy Reinke, Dissertation Supervisor

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The undersigned, appointed by the Dean of the Graduate School, have examined the dissertation entitled:

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Presented by Elise N. Hendricker, a candidate for the degree of Doctor of Philosophy and hereby certify that in their opinion it is worthy of acceptance.

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Dr. Cheryl A. Offutt

_____

Dr. Wendy M. Reinke

_____

Dr. Keith Herman

_____

Dr. Stephen D. Whitney

_____

Dr. Melissa Stormont

DEDICATION

This dissertation is dedicated to all of the hard working people in schools across the nation who dedicate themselves to children and families on a daily basis. You are selfless in your work, tireless in your actions, and your compassion does not go unnoticed.

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CHAPTER 1: INTRODUCTION

The occurrence of child academic and behavioral problems in the United States continues to be problematic. In 2007, 33% of 4th grade students scored Below Basic in the area of reading on assessments given in conjunction with the National Assessment of Educational Progress (NAEP), indicating their reading skills are not sufficient to master grade level curriculum (National Center for Education Statistics, 2007). In addition to reading concerns, 10% of children in today's schools exhibit an emotional or behavioral disorder that causes significant impairment in their daily functioning (National Institute of Mental Health, 2007).

Due to the increase in child needs, researchers have examined the relationship among academic and behavioral problems. Recent studies have indicated that academic achievement and behavior problems are often correlated, as Hinshaw (1992) estimated the co-occurrence to range from 10-50%. However, it is uncertain if low academic achievement leads to externalizing behavior problems (e.g., acting out, inattention, and disruption) or if children who exhibit early behavioral concerns then have difficulty with academic tasks upon entry to the formal school setting. Although a clear trajectory is lacking, numerous studies have found both sides to be true; students with reading difficulties are more likely than average achieving students to have behavior concerns (Heiervang, Stevenson, Lund & Hugdahl, 2001; Svetaz, Ireland & Blum, 2000) and students who exhibit early behavioral concerns struggle with reading achievement (Bub, McCartney, & Willet, 2007). More recently, Reinke, Herman, Petras, and Ialongo (2008)

found that 41% of boys and 35% of girls in 1st grade had significant early problems in the school setting; of this subgroup, nearly 1/3 of both boys and girls had co-existing academic and behavioral problems. Interestingly, a profile of girls solely exhibiting behavior problems was not identified, making it necessary to examine academic and behavioral problems as co-occurring, rather than purely separate entities.

Often less examined are children with internalizing behavior problems, such as anxiety or depression, and the relationship among these types of behaviors and other concerns, such as academic achievement. This subset of behaviors continues to increase in the United States, as suicide rates have doubled for children and adolescents in the past 30 years (Anderson, 2002) and the prevalence of depression among adolescents has increased to rates that are comparable with adult depression (Cicchetti & Toth, 1998). Multiple studies have indicated a relationship between early academic concerns in reading and later internalizing behavior problems, particularly depressive symptoms (Arnold, Goldston, Walsh, Rebousin, Daniel & Hickman et al., 2005; Maughan, Rowe, Loeber & Stouthamer-Loeber, 2003). Although internalizing behaviors often lead to impaired functioning across environments, including the school setting (Stark & Smith, 1995), this area of research and practice is often neglected from a school mental health perspective, as these behaviors are not always easily identified within the school setting. The increase of these behaviors coupled with poor identification practices highlights the necessity of their inclusion in future studies.

Literature on developmental psychopathology and the trajectories of early problem behaviors indicates that if concerns are not addressed, negative adolescent and

adult outcomes exist (Patterson, DeBaryshe, & Ramsey, 1989). At-risk children who exhibit academic, emotional, and behavioral issues are more likely to engage in a number of problem behaviors, such as antisocial behavior, delinquency, and substance use (Keating, Tomishima, Foster & Alessandri, 2002). In addition, they are more likely to struggle academically, drop out of high school, and be unemployed in adult life (Hardman, Drew, & Egan, 2008).

The large number of children affected by these problems, as well as the impact of negative outcomes at the individual, family, and societal levels, indicates the importance of studying reading difficulties, externalizing behavior concerns, and internalizing behavior problems within the context of a single study. Within the current research, there is a high need to identify the early risk factors associated with poor outcomes to shape prevention and early intervention practices for targeted, at-risk children, thus expanding current services to include systemic supports available within school and community settings.

Early intervention and prevention

As the intensity, frequency and duration of student concerns continues to increase, a significant amount of research has been devoted toward investigating best practices in the remediation of academic and behavior problems. Ongoing research and intervention programs targeting at-risk children have made significant gains in the field, particularly in the realization that programs targeting early intervention must be utilized, rather than waiting for problems to escalate (Zigler, Taussig, & Black, 1999). Many programs target children too late in the process, when deviant behavior, poor conduct, and academic

problems have been happening for long periods of time, decreasing the likelihood of (or potential for) significant behavioral change. In contrast, early intervention programs not only target children when they are young, thus changing their developmental trajectories, but are also shown to be cost-effective for society as a whole (Weissberg, Kumpfer, & Seligman, 2003).

To investigate the specific time intervals at which concerns must be addressed before negative outcomes are inevitable, researchers have utilized longitudinal data to examine the trajectories of students who exhibit early academic and behavior problems. Studies show that third grade is a crucial developmental time point in the lives of children. Students who exhibit delayed reading achievement at the end of third grade show little significant reading growth into eighth grade and beyond (Chard & Kame'enui, 2000). Similarly, children who exhibit serious, disruptive behavior patterns into third grade often result in chronic offenders who will need serious, intensive intervention throughout their lives to be successful (Kazdin, Mazurick & Bass, 1993). Therefore, early intervention and prevention practices must occur as early as possible within children and families, making it necessary to not only intervene efficiently, but to identify the risk factors predictive of these later concerns.

Schools as prevention and early intervention settings

Because intervention is needed at earlier ages, schools have been thrust into the limelight as a key place to intervene with children and adolescents. Although schools historically have focused on building academic skills and competence, today's schools must address not only academic and learning concerns, but also understand and be

equipped to intervene with student behavioral and mental health concerns (Costello-Wells, McFarland, Reed & Walton, 2003), due to the high correlation between academic and behavioral concerns (Hardman et al., 2008). The changing needs of America's students make it necessary for schools to accurately identify and provide services for at-risk children and families.

However, the current state of prevention, early intervention, and mental health services in schools continues to be seen as secondary to academic issues, despite knowledge linking social, emotional and behavioral issues with overall academic achievement (Adelman & Taylor, 2000). Mental health problems affect 20% of all children and adolescents, yet only 2/3 of these children receive services (Department of Health and Human Services, as cited by Mental Health America, 2009), leaving a large group of students who could benefit from school-based services.

Before schools can become effective agents in the prevention and early intervention of academic and behavior problems, two major issues must be addressed. First, school professionals have limited knowledge of the collective risk factors that are predictive of later negative outcomes, highlighting both a research and practice gap. Current studies on youth focus on two primary areas: (1) analyzing individual risk factors affecting children and (2) examining the number of risk factors an individual has experienced and its correlation with later outcomes. According to Parra, DuBois, and Sher (2006), this approach is variable-centered and neglects to examine how risk factors co-occur within the life of an individual at various levels and impact later outcomes. Subsequently, they advocate for expanding the cumulative risk approach by utilizing a

person-centered approach, which allows researchers to take into account the unique profiles of individuals and examine how risks are co-occurring. By conceptualizing risk in this way, researchers can gain a cumulative understanding of how multiple, simultaneous risk factors occurring within important environments, particularly the family system, influence later outcomes for children and adolescents. Research must address this area and determine risk profiles of individuals utilizing a person-centered approach, which would then enable schools to understand the types of students and families that need to be targeted for early intervention.

Within current schools, kindergarten screening is often conducted to determine which children are at-risk for later academic and behavioral problems and are in need of supplementary early intervention services. Current kindergarten screening practices target various domains of individual child development, reflecting a risk approach that targets individual risk factors within the child (Costenbader, Rohrer, & Difonzo, 2000), while neglecting other risk factors that impact early child outcomes, such as dynamics within the family environment (e.g., discipline practices, child-parent interactions). A more progressive, evidence-based approach to kindergarten screening would include targeting evidence-based risk factors found within the family environment that are predictive of later academic and behavioral outcomes, as this is typically the largest social influence in the life of a young child prior to school entry, while also giving close attention to how numerous family risk factors co-occur within children. However, because empirical knowledge regarding cumulative risk is lacking, many schools do not have proper screening methods upon school entry to examine numerous risk factors

within children and families, making it difficult to target concerns before they arise. Therefore, empirically-based screening practices must be developed to identify cumulative risk factors from a family systems perspective that are known to predict negative outcomes, ensuring that schools are targeting the correct population for intervention.

Once knowledge of risk profiles is obtained and effective screening practices are in place, schools must refine and expand their intervention practices to span multiple environments that affect a child's learning and behavior. Currently, interventions in the school system are often aimed at the individual child or the classroom setting, while neglecting the family system, which is proven to be a significant contributor toward child learning and behavior (Patterson et al., 1989). According to Beckner (2007), schools have a negative history of working with families only when problems have escalated. Current school-wide initiatives, such as Positive Behavior Support (PBS), often involve parents at intensive levels of service, rather than including families in the prevention and early intervention phase (Fox, Dunlap & Cushing, 2002). If schools wish to be effective in preventing significant academic and behavioral problems, they must learn more effective ways of targeting families in need of services within a child's early school experiences and deliver appropriate family-based interventions to reduce malleable risk factors.

Summary

As children are facing an increased risk of developing academic or behavioral concerns, early intervention and prevention strategies within schools are needed (Durlak

& Wells, 1997; Webster-Stratton & Taylor, 2001); however, schools are not well equipped to provide these services due to poor conceptualization of risk within the literature (Parra et al., 2006), lack of proper identification practices based on knowledge of family-based risk factors (Costenbader et al., 2000), and insufficient intervention practices incorporating the family system prior to the escalation of problems (Fox et al., 2002).

In order for effective prevention and early intervention practices to take place in the school setting, it is crucial to target those students at high risk for later development of negative academic and behavioral concerns. Few studies have identified the cumulative familial risk children bring with them to school, despite the strength of the literature describing family risk factors and their correlation with negative child academic and behavior problems. As children enter the school system with exposure to multiple risk factors, it is imperative for schools to understand these risk factors from a cumulative perspective. Because kindergarten is the first formalized school experience for many children, the family setting is an important system to target in terms of understanding the risks families currently exhibit, the co-occurrence of these risks, and how this risk predicts later academic and behavioral development, which informs screening and intervention practices .

The next chapter will provide an extensive review of the literature regarding (1) the characteristics of students with early academic and behavioral problems; (2) specific family risk factors associated with early child problems; (3) the concept of cumulative risk factors; (4) early intervention, prevention, and family intervention efforts to reduce

problematic outcomes; and (5) current school practices related to systematic screening and intervention.

CHAPTER 2: REVIEW OF THE LITERATURE

Early academic and behavioral issues and later effects

It is common knowledge that children who exhibit early academic and behavior problems are at increased risk of later negative outcomes (Hardman et al., 2008; Keating et al., 2002; Patterson et al., 1989), making it necessary to identify risk factors indicative of later problems to target children and families and provide them with early intervention services. Optimally, this early intervention will occur as early as possible, particularly before third grade when remediation becomes much more difficult (Chard & Kame'enui, 2000; Kazdin et al., 1993). Of particular concern are those children identified as "early starters" (Shaw, Dishion, Supplee, Gardner & Arnds, 2006). These children begin exhibiting behavioral difficulties in early childhood (ages 2-5) and are at increased risk of exhibiting delinquent behaviors and decreased academic achievement in later childhood and adolescence. Although "early starters represent approximately 6% of the population," they are "responsible for almost half of adolescent crime and three fourths of violent crimes" (Shaw et al., 2006, p.1), making it a societal necessity to intervene as early as possible to prevent later negative outcomes that cause both financial (Henggeler, Schoenwald, Borduin, Rowland, & Cunningham, 1998) and social problems (Zigler et al., 1999) for children, families, and society.

Developmental trajectories and life course**.** Literature in developmental psychopathology indicates a defined trajectory of early risk factors and later problem behaviors exhibited by children who display early signs of behavioral difficulty, such as

aggression, poor social competence, defiance, negative emotionality, and poor emotional self-regulation. Patterson et al. (1989) describe this developmental trajectory and the major risk factors evident within early childhood, middle childhood, and adolescence. A conceptual model developed by these authors is shown in Figure 1.

Within the early childhood period (ages 2-5), the functionality of problematic behavior within the child's environment is a major contributor in the development and stability of externalizing behaviors. Children with parents who utilize poor parental practices, such as ineffective discipline and monitoring, often use negative emotions on a regular basis, leaving parents and other adults with few coping strategies to console their child, beyond either giving in to their child's request or utilizing aversive parenting practices (Patterson et al., 1989). Research indicates that negative child and parent behaviors continue to be exhibited because they are functional from both a behaviorist and social learning perspective. Within the aversive cycle of conflict in families, parents and children are negatively reinforced for their behaviors, increasing the likelihood that they will continue to use this behavior in the future (Patterson, 1982). Observations of these home environments confirm this aversive cycle, as conflict occurs once every 16 minutes, with 10-15% of interactions defined as aversive (Patterson, Reid & Dishion, 1992). As the child's behaviors become increasingly negative, the parent may display punitive practices, such as yelling, spanking, or hitting the child, which leads the child to escalate further until one of two situations occurs: (1) the parent either gives into the child's request or demand or (2) the parent increases their own negative behaviors until the child complies. As this cycle continues, both the child and the parent learn what

behavior will get the quickest response, leading to behavior escalation in frequency and intensity over time, as well as the modeling of aggressive behaviors (Patterson, 1982).

During middle childhood (ages 6-11), children enter the formal school system, which becomes a large environmental factor in their learning and development (Shaffer, 2002). As children enter classrooms, negative behaviors learned in the home setting impact academic achievement and peer socialization. Multiple studies have found that children with behavior concerns have difficulty exhibiting crucial behaviors needed to succeed in the school environment, such as staying on task, paying attention, staying in their seat and completing work (Dishion, Loeber, Stouthamer-Loeber & Patterson, 1983; Hops & Cobb, 1974; Shinn, Ramsey, Walker, O'Neill & Steiber, 1987). As a consequence of problem behaviors, students are often sent out of the classroom, which results in loss of instructional time and increased difficulty across academic subjects (Arnold, 1997). This loss of instructional time not only affects academic achievement, but also social competence, as children not engaged in appropriate classroom activities with peers miss opportunities for appropriate instruction and practice in social skills. In addition, they may display similar types of negative behaviors, such as aggression and defiance, within peer relationships, leading to social rejection (Dishion, Andrews & Crosby, 1995).

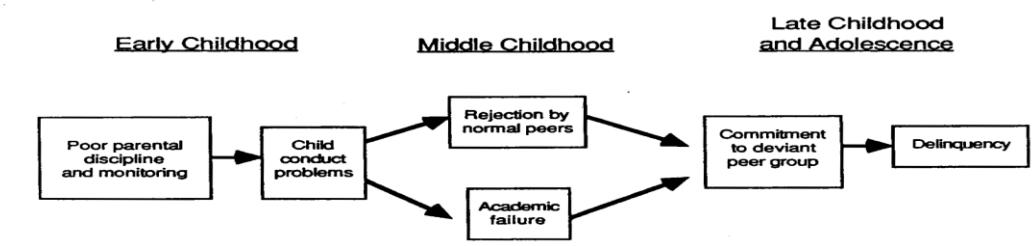
During adolescence (ages 12-18), peer relationships take on increased importance, as adolescents look for peer groups to confirm their identity. Children who are continually rejected by normative peer groups turn to deviant peer groups throughout middle childhood (Cairns, Perrin & Cairns, 1985), and then become committed to these

deviant peer groups during adolescence. According to Dishion & Kavanagh (2003), these deviant friendship patterns lead to increased delinquent acts and socially sanctioned crimes, such as stealing, substance use, and violence. As these peer groups engage in delinquent acts within the school and community, they detach from the school environment, which contributes to further academic failure and drop-out. Students with behavior problems have a high school dropout rate of 50-70% and many leave high school before the 10th grade. The rate of high school graduation for these students is approximately 25-30%, significantly lower than the national average. After high school, these students have difficulty with stable employment, as only 41% hold jobs two years after exiting school, compared to over 60% of students without behavioral or emotional concerns (Hardman et al., 2008).

If negative behavioral patterns continue into adolescence, negative life outcomes, including mental health issues, continued crime and delinquency, and poor social outcomes, may persist into adulthood. Children identified as being aggressive at school entry are more likely than non-aggressive peers to exhibit co-morbid mental health problems, particularly internalizing disorders, such as anxiety and depression (Ialongo, Poduska, Werthamer, & Kellam, 2001). This combination of externalizing and internalizing concerns can lead to problematic interpersonal relationships, poor academic and work performance, and self-harm thoughts and behaviors if left untreated. Delinquent and antisocial behavior, particularly a history of violent acts, in adolescence is correlated with continued criminal behavior in adulthood (Loeber, 1990; Moffitt, 1993), leading to economic burdens on society (Henggeler et al., 1998). In addition to increased

crime, youth who exhibit this antisocial behavior trajectory are at increased risk of other negative social outcomes, including substance use, unemployment, job instability, divorce, domestic violence, and parenting problems (Farrington, 1991). The persistent negative life outcomes associated with early academic and behavioral difficulties makes it imperative to identify children early in the developmental trajectory so that early intervention and prevention services can be implemented to remediate concerns.

Figure 1: Developmental trajectory of early antisocial behavior (Patterson et al., 1989)



Theoretical approaches to addressing early child concerns

Given the importance of early identification of children at-risk for later academic and behavioral difficulties, researchers have emphasized a variety of theoretical approaches that practitioners can utilize to assess, conceptualize and treat these concerns.

Family systems theory. Psychologists utilizing a family systems theoretical approach conceptualize an individual within the context of his or her family; if an individual is affected by a certain phenomena, the entire family is affected as well and family structure is likely to be impacted (Seligman & Darling, 2007). Minuchin (1985) was one of the first to ascribe the family systems approach to the conceptualization and treatment of psychological and behavioral issues within children. Within this approach, the family is viewed as a larger system where various people within the system are reliant and dependent on one another. The family can be conceptualized as a series of conjoined

and overlapping circles, where subsystems are formed (i.e., the parental relationship, the mother-child relationship); however, these subsystems are interconnected and affect other relationships within the family (i.e., strain within the mother-child relationship is likely to impact the parental relationship). Conceptualization of problems within a family are also viewed within this circular, reciprocal pattern, as it is not one person who causes a problem within another person; instead, there is a pattern of behaviors and interactions that occur among individuals. These behaviors emote particular responses within each person that then influence the behavior of others, continuing in a cyclical nature. These patterns of behavior may become normalized within particular family systems, as families strive to maintain balance and homeostasis (Jackson, 1957), resulting in engrained patterns that may prove difficult to change.

From a treatment perspective, the family systems approach advocates for the inclusion of all family members within treatment, as any change in an individual will evoke change within the other members of the system. Particularly for those families with children exhibiting behavioral concerns, emphasis is given to the function that the child behaviors may play within the family system and how this affects particular subsystems and relationships (Minuchin, 1985). For example, a child exhibiting somatization concerns may cause anxiety in the mother, which allows her to place much of her focus on her child, rather than addressing problems she may have within her marriage (Minuchin, Rosman, & Baker, 1978). Even behaviors that the child may exhibit that appear to be positive, such as empathy or caring for others, can be viewed functionally within the family system, as the child showing care for the father,

hypothetically, may be due to the lack of caring given by the mother toward her husband. From this theoretical approach, treatment then becomes focused on understanding the functionality of such behaviors, bringing subsystems and patterns of behavior that exist among family members to the forefront, and replacing these cyclical patterns with positive interactions, communications and boundaries.

Life course/social field orientation. Life course/social field theory (Kellam, Branch, Agrawal & Ensminger, 1975) is a theoretical approach that emphasizes both developmental and social aspects that contribute to psychological, behavioral and mental health adjustment. When working with children and adolescents, it is important to give proper attention to the normative developmental trajectory of youth. Kellam and colleagues (1975) noted that at certain points within the life span, there are particular demands within environments, such as home and school, that one must accomplish; if this can be done successfully, it is assumed that children will have positive behaviors and levels of overall adjustment. At the same time, people within the child's environment, such as family members, teachers, and peers, respond to these behaviors and attempts to meet social demands either positively or negatively, thus informing the child of their ability to adapt and be successful within the environment.

This external view of social adaptation status (i.e., how people within the environment respond), as well as the internal view of one's psychological well-being (i.e., how the child views him or herself and his/her own competency) proceed in a reciprocal relationship, with one influencing the other (Kellam et al., 1975). These constructs may proceed positively if demands are successfully met; however, they also

have the potential to create a cycle of continued behavioral and adjustment problems if not properly addressed. Thus, early concerns, specifically children not meeting social demands within their environment at an early age, may lead to maladaptive behaviors that are more likely to continue over time, affecting a variety of social environments the child is a part of on a daily basis. Therefore, intervention within this approach should be targeted in helping children master these social demands early in the life course, while also helping those influential people within the environment, such as teachers and parents, respond appropriately to situations of mastery and failure (Kellam, Brown, Poduska, Ialongo, Wang, & Toyinbo et al., 2008).

Combining theoretical approaches. When aiming to prevent child behavioral and academic concerns, researchers utilizing a developmental epidemiology framework argue that a number of elements must be given proper attention to effectively implement prevention and early intervention programming for at-risk children and families within the school setting. A family systems approach is necessary, given that the largest social influence in the life of a young child is their family (Patterson et al., 1989). The entry of children into the formal school setting in kindergarten marks a major transition for the child and is likely to be a challenge for the entire family system, as they are then forced to reorganize their patterns and behaviors with one another, potentially leading to a state of disequilibrium and chaos (Minuchin, 1985). This is likely to be enhanced for at-risk families who exhibited dysfunctional patterns of behavior prior to this transition. Therefore, if early intervention programming for children and families exist within

schools, it is important to recognize this transition as a potential time of stress and give relevant attention to the needs of the family during this time.

Along with emphasis on the family system, the developmental trajectory of child development, including normalized expectations and behaviors, along with the feedback that children receive during their early years must be understood when conceptualizing the assessment and treatment of those children who exhibit academic and behavioral difficulties. As Kellam and colleagues (1975) stated, from a developmental perspective, particular demands exist across environments. The transition to kindergarten is no exception, as children face increased expectations within the school setting from teachers (Rimm-Kaufman, Pianta & Cox, 2000). In addition, as children age parents begin to increase their demands as well, with children expected to exhibit increased prosocial behaviors, such as using manners and cleaning up toys, while decreasing negative behaviors, such as crying and temper tantrums (Shaffer, 2002). Feedback and responses by adults are given to children to inform them of their ability to meet such expectations, often leading to judgments about the child on behalf of adults (i.e., teachers recognizing children who are difficult behaviorally) that are relayed to children (i.e., a child recognizing that they are being disciplined for their behavior in the classroom more than peers), thus impacting their psychological well-being.

Particularly for those children with significant family difficulties, the transition to kindergarten can be increasingly difficult, making it necessary to learn more about the specific family risk factors that exist and contribute to academic and behavioral concerns early in life. Rimm-Kaufman, Pianta and Cox (2000) surveyed teachers and found that

16% of children had difficult transitions to kindergarten. Almost half of all teachers indicated that nearly a majority of their classroom had observable problem behaviors within at least one area of kindergarten transition, such as inadequate social skills or poor emotional regulation. These problems were exacerbated when other risk factors were identified, such as ethnic or racial minority status and lower levels of family income. Therefore, at the global level, the family systems and life course/social field approaches must be utilized to understand the transition to kindergarten and the challenges children and families face within the school setting; however, specific risk factors that may increase the likelihood of problems for children and families should also be assessed and remediated when possible, which will be addressed in the next section.

Family risk factors

To effectively identify children at risk of later academic and behavioral problems, malleable risk factors must be identified and addressed early in life to prevent negative life course outcomes. Although early child behavior problems can be conceptualized as individual concerns within the child, current researchers in the field of child development and psychology have begun to investigate how family dynamics and patterns serve as risk factors and impact later academic and behavioral outcomes. This has become a focus of research, prevention and intervention, due to the fact that children are largely independent on parents at early ages and the home environment is the predominant force through which children are socialized at a young age (Shaffer, 2002).

Current research identifies the larger family system as one of the earliest risk factors contributing to and sustaining early behavioral concerns (Patterson et al., 1989).

To validate the contribution of the family system in the development of child problems, researchers have hypothesized that if a child's poor behavior was due to internalized individualized problems alone, family intervention effects would not carry over to other children in the home environment. However, a study conducted by Brotman, Dawson-McClure, Kiely, McGuire, Burraston and Bank (2005) delivered a family-based intervention to families with a problematic preschool child exhibiting high levels of externalizing behavior problems, such as aggression, conduct problems, and hyperactivity. Families participating in the intervention not only reported lower levels of behavior problems in the target child, but also older siblings who were not targeted in the intervention. This finding, in line with a family systems approach to conceptualization of risk and treatment (Minuchin, 1985), indicates that the environmental context in which a child lives, learns, and grows is a large contributor to their behavior and development, making the promotion of a healthy family environment through prevention and early intervention a necessary focus in the treatment of childhood behavioral and co-existing academic and emotional problems.

In order for intervention practices to be successful, specific risk factors exhibited by families and their correlations with later child problems must be understood. During the early childhood period, various family variables have been found to impact child behavioral and academic concerns such as: (1) discipline practices (e.g., Chamberlain, Reid, Ray, Capaldi & Fisher, 1997); (2) the overall home environment (e.g., Bradley & Caldwell, 1982); (3) parental mental health (e.g., McCarty & McMahon, 2003); (4) parental involvement in the school setting (e.g., Dornbusch, Ritter, Leiderman, Roberts &

Fraleigh, 1987); and (5) parental perceptions of education (e.g., Bronstein, Ginsburg & Herrera, 2005). Literature on these specific family risk factors will be explained in further detail.

Discipline practices. Parental practices, particularly in the area of discipline, have surfaced as a key risk factor, as some studies have found that poor parenting practices can account for 30-40% of the variance in poor child behavior during the preschool and early elementary years (Patterson et al., 1989). Parental discipline and interaction patterns are generally stable over time, leading to developmental outcomes that show an associative relationship among early parenting behavior and later childhood and adolescent outcomes (Baumrind, 1977, 1991; Steinberg, Lamborn, Darling, Mounts & Dornbusch, 1994).

Discipline practices are often associated with parenting style, which is often examined empirically along two interrelated continuums: the level of acceptance and the amount of control exhibited by parents. As described by Maccoby and Martin (1983), acceptance refers to the amount of support, warmth, sensitivity, encouragement and affection shown by parents towards their children. Control is indicative of a parent's regulation, monitoring, expectations and restrictions placed on the child. Baumrind's classic studies (1967, 1971) of parents and children yielded different parenting styles based on these characteristics, all of which have been extensively studied and examined in relation to parenting practices, discipline methods, and child outcomes.

Research has indicated that the most positive parenting style is defined as authoritative. Authoritative parents are high on both continuums. While they exhibit high levels of acceptance for their child, they also have high levels of consistency in their

discipline practices and clear, yet demanding expectations for children in terms of responsibility and proper behavior (Baumrind, 1971). These parents use high amounts of positive discipline practices, including ignoring minor misbehaviors, redirection and time-out, and utilize few punitive practices such as spanking. When promoting positive behaviors, these parents are most likely to use praise, encouragement and incentives to reward children when appropriate. Research indicates that authoritative parents raise children who are well-adjusted socially, emotionally, and academically and exhibit less externalizing behavior concerns (Frosch & Mangelsdorf, 2001), making it the parenting style most consistently associated with positive child outcomes.

Authoritarian parenting is characterized by low levels of acceptance with high levels of control. Unlike the authoritative parent who seeks to explain rationales for their practices and takes the child's perspective into view, authoritarian parents exercise control that is inflexible and demanding (Baumrind, 1971). Coupled with low levels of warmth, support, and encouragement, these parents are more likely to resort to punitive discipline practices, such as spanking or yelling, to control their child's behavior. Few positive practices, such as praise or encouragement, are utilized, as parents expect their children to exhibit positive behavior without reinforcement. Children with authoritarian parents are more likely to display negative emotionality, negative moods, and fewer positive social skills (Baumrind, 1967). As these children move into adolescence, although they are likely to have average academic and social skills, they are more likely to conform to social norms and those perceived as authority, due to high levels of parental control (Steinberg et al., 1994).

On the opposite end of the spectrum are permissive parents. These parents exhibit high levels of acceptance with their children and are likely to show encouragement and support toward their children on a regular basis. However, permissive parents are low on the control continuum, indicating they lack clear expectations, monitoring, and demands for their child's behavior (Baumrind, 1971). Although they use positive strategies to support their children, such as praise and rewards, these techniques are their only strategies; relatively no negative strategies are used to alter negative behaviors. Children raised by permissive parents are often impulsive, self-centered, lack self-control and self-regulation strategies, have lower levels of academic achievement and independence, and engage in more adolescent drug use than children from other parenting groups (Baumrind, 1967; Steinberg et al., 1994).

Although authoritative, authoritarian and permissive parenting styles were the original parenting dimensions studied by Baumrind, a fourth subgroup, uninvolved parents, was identified by Maccoby and Martin (1983). Similar to permissive parents, uninvolved parents often have lax discipline practices; however, they exhibit little warmth for their children and show low positive regard, praise, or positive interactions with their children because they have either rejected their children or have other stressors taking precedence over parenting. These children have the poorest outcomes, as they exhibit high levels of externalizing behaviors and aggression by preschool (Miller, Cowan, Cowan, Hetherington & Clingempeel, 1993). As they transition into elementary school, they are likely to have poor academic achievement and conduct problems, which

leads to adolescents who are rebellious, hostile, antisocial, delinquent, and sexually devious (Kurdek & Fine, 1994; Patterson et al., 1992; Weiss & Schwarz, 1996).

Research clearly indicates that early parenting practices have a large impact on child development and later academic, behavioral, social, and emotional outcomes. Due to the lasting impact of parental practices (Holden & Miller, 1999; Loeber, Drinkwater, Yin, Anderson, Schmidt & Crawford, 2000), discipline methods and structures of parent-child interaction must be addressed within prevention and early intervention programming to alter the trajectories of children raised in homes with parents utilizing poor behavioral management practices. Many researchers and program developers have used this research and these conclusions as a foundation for evidence-based intervention programs that aim to alter this early risk factor; the specifics of these efforts and their evidence will be discussed at a later point within this manuscript.

Home environment. The home environment is one of the largest socialization agents in the early life of a child, thus lending itself to be an important indicator of positive child development, as well as later childhood difficulties. Research has indicated that families with chaotic home environments and multiple life stressors, including family instability, high levels of stress, lower socioeconomic status, job instability and poor neighborhood conditions are more likely to have children exhibiting problematic early externalizing behaviors and lower academic achievement (Ackerman, Kogos, Youngstrom, Schoff & Izard, 1999; Bradley & Caldwell, 1982) for a variety of reasons.

First, due to life stressors, parents or other adult household members may not be able to hold stable, consistent work, leading to frequent job changes and layoffs, which

increase family mobility and decrease student achievement (Alexander, Entwisle & Dauber, 1996; Haveman & Wolfe, 1994). In addition, children raised in unstable home environments are more likely to have multiple caregivers, making it more difficult to form close relationships and attachments with a single care provider (Ackerman et al., 1999). Research indicates that children with multiple, indiscriminant attachments to various caregivers are more likely to exhibit hyperactivity, hostile behaviors toward adults, and higher levels of externalizing behavior concerns at age 5 compared to children with secure attachments (Lyons-Ruth, Bureau, Riley & Atlas-Corbett, 2009). Finally, poor family environments are often associated with poor family and marital relationships, including high conflict among parents, harsh parental interactions, and disagreement on parenting practices, leading to children who are at increased risk of problematic behaviors, particularly externalizing behaviors that may manifest as early as preschool (Ackerman et al., 1999; Frosch & Mangeldorf, 2001).

While unstable family environments due to poverty and other life stressors are important factors that should be given proper attention, studies have gone one step further to examine the types of mediators that exist within these family environments that affect later child outcomes. One such mediator is the level of cognitive stimulation in the home environment, as families facing financial and interpersonal stressors often have little time, energy, or resources to devote to their child's academic and behavioral development. Evans (2004) found that children raised in poor family environments are read to by adults less frequently, have fewer books in the home, less access to computers or other educational technology, and spend more hours watching television compared to

children from middle or higher socioeconomic status homes. In addition, these children are likely to attend low-income preschools and daycares that are not licensed or accredited, which contributes to fewer school readiness skills and lower academic achievement before kindergarten, making it more difficult to catch up to higher achieving peers.

However, after the influence of family income is taken out of the equation, the amount of cognitive stimulation in the home differs across families and contributes to later academic outcomes. Davis-Kean (2005) examined parenting behaviors and levels of cognitive stimulation in the home in relation to child academic achievement. Those families with lower incomes who engaged in stimulating home activities with their children, such as playing games, reading books, and putting together puzzles, had children with higher levels of academic achievement compared to children of similar socioeconomic backgrounds whose parents did not engage in these types of activities, making the level of cognitive stimulation a malleable risk factor that can be addressed realistically in the home setting.

Overall, the environment in which children live has a substantial impact on child development, as children exposed to family instability and poorer environments experience multiple stressors and less cognitive stimulation in the home. However, although family instability due to socioeconomic status does play a role in academic outcomes, parenting behaviors and the level of cognitive stimulation displayed toward the child can either positively or negatively impact child development. This evidence of the importance of cognitive stimulation in the home setting must be examined cumulatively

along with the presence of other family risk factors, which will allow researchers and practitioners to determine how to best meet the needs of these families early in life.

Parent mental health. Although literature has examined the mental health needs of children, it is also imperative to address parental mental health, as the National Institute of Mental Health (2007) estimates that one in four adults, or over 57 million people, meets criteria for at least one mental disorder, with nearly half of this population exhibiting co-morbid disorders. Empirical literature examining the relationship between parental mental health and child outcomes has centered on parents exhibiting depressive symptoms, as depression is one of the most common mental disorders, affecting over 20 million children and adults (Mental Health America, 2007).

Research on depressed parents, particularly mothers, has yielded a developmental model, which describes a trajectory of early parenting behaviors, developmental processes, and later childhood outcomes. First, parents who are depressed display significantly different behaviors toward their child when compared to parents who have overall positive mental health. During infancy, mothers with depression are more likely to be less responsive to their child's needs, exhibit negativity and hostility, and display less affection toward their children (Murray, Fiori-Cowley, Hooper & Cooper, 1997). If depressive symptoms continue, these parenting behaviors are likely to extend into early and middle childhood. Within a study of depressed parenting behaviors, Crook, Raskin and Eliot (1981) indicated that depressed mothers often reject and ridicule their children, have few positive interactions with children, and exhibit limited affection. An overall lack of positive parenting behaviors was validated by Jacob and Johnson (1997), who

extended this result by finding that an overall lack of positive communication and interaction is found among all family members, even the child and a non-depressed parent, when one parent in the family is exhibiting depressive symptoms.

These parental behaviors have a significant impact on their level of warmth, monitoring, and discipline methods, which often leads to poor parent-child relationships and interactions (McCarty & McMahon, 2003). Due to the parent's inability to form a close relationship with their child, parents who exhibit depressive symptomotology have a higher likelihood of having children with an insecure attachment. Insecure attachments are often developed by children when mothers are either inconsistent in their early caregiving skills or are resistant and unresponsive to their children's needs, therefore rejecting their children at an early age (Ainsworth, 1979). Children who are classified as having insecure attachment with mothers at a young age have been found to have poor mother-child relationships, poor overall family functioning and higher levels of familial stress, leading to social and emotional withdrawal, poor interpersonal relationships, deviant behaviors and increased chance of diagnosable mental disorders (Allen, Moore, Kuperminc & Bell, 1998; Carlson, 1998; Schneider, Atkinson & Tardif, 2001).

Studies specifically examining children of depressed parents, independent of attachment type, have found long-term negative behavioral outcomes. In terms of disruptive behaviors, children raised by depressed parents often have higher levels of externalizing problems, such as aggression and negative emotionality; researchers have hypothesized that these behaviors function within the home environment as a method of allowing children to gain adult attention when parents display high levels of rejection and

are emotionally distant (Moss, Cyr, & Dubois-Comtois, 2004). In addition to externalizing concerns, children exhibiting depressive symptoms and overall maladjustment are more likely to have parents whose behaviors resemble those of depressed parents, marked by highly aversive, negative and tense communication practices (Dadds, Sanders, Morrison, & Rebgetz, 1992).

Based on the empirical literature, parental mental health appears to be an early risk factor for later negative outcomes, particularly due to parent interaction practices which can hamper the parent-child relationship. In addition, high levels of negativity among depressed parents and children contribute to a negative home environment, as even those family members that are not depressed continue to have negative interactions with the child (Jacob & Johnson, 1997), making it important to identify families with depressed members to intervene and improve overall functioning.

Parental involvement in school. A child's success in school can often be fostered by parental involvement in the school setting. According to Broffenbrenner (1979), connections must be made among adults within child environments. Broffenbrenner's ecological systems theory (1979), labels the connection between the home and school environment as a mesosystem, indicating the importance of the link between the two environments in the life of children. The nature of this connection, either positive or negative, will have an effect on the child's development and behavior, making it imperative that the home-school relationship be collaborative and positive in nature for the child's best interest.

Christenson and Sheridan (2001) highlight the theoretical underpinnings for involving parents in the school system and its positive outcomes for students. An important outcome of parental involvement is increased stability for students. When parents make their presence known in the school environment and collaborate and communicate with teachers, there are shared goals and communication around school and home practices and what is effective for student learning and behavior. Goals and expectations can be established jointly, and teachers and parents can teach similar behaviors, as well as reinforce the child similarly across both the home and school environments (Christenson & Sheridan, 2001). This stability is crucial for appropriate child behavior, particularly for those who struggle with learning and prosocial behavior.

Increased communication makes it more likely that parents will collaborate with teachers on a regular basis and engage in effective problem-solving if concerns arise. Parents and teachers who exhibit positive communication not only collaborate about problems children may be having, but also have the opportunity to celebrate successes, creating a supportive environment for children throughout both positive and difficult times (Christenson & Sheridan, 2001). Empirical research on parental involvement within the educational process has shown favorable outcomes in many areas. A main outcome is that students have more positive attitudes about school (Hoover-Dempsey, Battiato, Walker, Reed, Dejong & Jones, 2001). This is hypothesized to occur through social learning and modeling. As parents become invested in the school setting and communicate and work actively with school professionals, this behavior communicates the message to their children that education is important (Hoover-Dempsey & Sandler,

1995). These values cause students to increase their own learning behaviors, such as completing school and homework requirements successfully, which leads to increased personal competence and academic motivation (Hoover-Dempsey et al., 2001).

Research also indicates that student self-regulation is improved when parents are involved in the school setting and utilize similar expectations, techniques, and strategies within the home environment. Again, the principles of social learning apply; students see their parents communicating with teachers and soliciting feedback about homework and learning strategies, which models positive help-seeking behaviors and provides encouragement and reinforcement for students to exhibit similar behaviors in the school setting. Students begin to internalize these processes and exhibit their own regulation behaviors, such as knowing how and when to ask for help from teachers and parents (Walker & Hoover-Dempsey, 2006). This process of academic self-regulation is also transferred to emotional self-regulation; as involved parents are more likely to provide feedback and assist with academics, they model coping and emotional regulation skills during these tasks. As the student learns academic skills, they also learn coping and management strategies, such as breaking small tasks into chunks or taking breaks when they are frustrated. These self-regulation skills transfer and generalize to other situations, as students begin to understand how to exhibit appropriate behaviors and manage their emotions within different situations (Xu & Corno, 1998).

Parental involvement also leads to increased learning at home via direct instruction and reinforcement. When parents are invested in their child's education, they are more likely to directly teach their child academic skills and appropriate behavior in

the home, as well as work to provide similar types of reinforcement across the home and school environments. This effect on learning outcomes has been found as early as preschool, as Head Start parents who had higher levels of involvement within the school setting had children who exhibited higher pre-literacy skills (Arnold, Zeljo, Doctoroff & Ortiz, 2008). However, research indicates that these factors are mediated by the strength of the connections that are made between teachers and parents, signifying that relationships must be positive and collaborative in nature, as well as ongoing over long periods of time for positive effects to occur (Hoover-Dempsey & Sandler, 1995).

Numerous decades of research has indicated that parental involvement in a child's education is important for student success. By collaborating and communicating with teachers, parents are more likely to directly teach academic and behavioral skills in the home setting, reinforce positive behaviors, create goals and expectations that are consistent with those in the school setting, and work to solve problems effectively and efficiently with school staff. As parents model these behaviors for their children, students have increased stability and self-regulation and understand the value of education, all of which directly impacts academics and behavior.

Parental perceptions of education. Significantly related to parental involvement in school is a parent's perception of education and its importance in the life of their child. From a social learning perspective, it is hypothesized that when parents value education and hold realistic expectations for their child's academic achievement, these perceptions are modeled through behaviors and value statements. These behaviors and values are reinforced by parents, which leads to increases in positive child academic behavior,

leading children to understand that school is important and should be taken seriously (Hoover-Dempsey & Sandler, 1995). Beyond an overall value of and involvement in education, research has examined specific parental perceptions of educational aspects that influence later child academic achievement and behavioral outcomes. Of particular interest are perceptions of school readiness and goals for educational attainment.

School readiness. The construct of school readiness has received considerable attention due to a national educational goal stating that all children would be ready to learn at school entry by the year 2000 (U.S. Department of Education, 1994). Systemic shifts in child education, including children starting full-day school programs at earlier ages, the transition from half-day to full-day kindergarten programs in traditional schools, and the increased academic demands for young children entering the school system, have also placed an emphasis on school readiness. Traditionally, school readiness was viewed as a set of narrow skills and necessities children needed to have upon school entry to be successful in the school environment; however, this definition has become more inclusive to accommodate the wide range of child needs, early life experiences, developmental differences, and learning abilities (National Association for the Education of Young Children, 1995).

School readiness continues to be a concern among many parents, partly due to research indicating that when children adjust poorly to the transition to formal schooling, academic achievement can be negatively affected (Entwisle & Alexander 1998). In addition, many schools professionals hold the view that if children can be adequately prepared and start school successfully, positive school achievement and well-being will

follow (Kagan & Neuman, 1997), leading parents to have defined ideas about skills needed for school readiness, their child's abilities, and whether or not their child will be successful in the school environment. For example, McBryde, Ziviani & Cuskelly (2004) found that parents were most concerned with the child's age, adaptability, social skills, and persistence as indicators of school readiness. Other broad contextual factors, including the child's overall development (cognitive, motor, emotional, academic skills) and the home environment, were not rated by parents as important, despite literature indicating their importance in early achievement (Bradley, Caldwell & Rock, 1988; Dockett, Perry & Tracey, 1997).

Although parents hold ideas regarding their child's readiness for school and make critical decisions about school entry based on these beliefs, little empirical literatures exists that examines parents' perceptions of school readiness in relation to later academic and behavioral outcomes. However, given that parent values of education and perceptions of their children are modeled through behaviors and value statements (Hoover-Dempsey & Sandler, 1995), it is reasonable to believe that child attitudes, confidence and self-esteem may be directly affected, which in turn affects academic achievement and behavior. Future research of family risk factors should include this as a variable of interest, given the theoretical foundation for its importance.

Educational attainment. Student educational attainment is consistently shown to be predictive of long-term success in occupational and social realms within adulthood (Monk-Turner, 1989), which is directly impacted by the values and goals parents hold for their child's education. These beliefs often have a strong impact on child academic

achievement and behavior in a number of ways. First, parents provide resources to meet academic goals (Duncan, Featherman & Duncan, 1972), particularly when goals are lofty, often requiring children to participate in outside activities, such as tutoring, extracurricular activities, or test preparation courses, that children may or may not enjoy. Second, parents both directly and indirectly encourage and promote academic goals (Cohen, 1987) through resources, statements, academic involvement and modeling of behavior. In addition, parents may praise behaviors that are compatible with educational goals, as well as punish those behaviors that are incompatible (Astone & McLanahan, 1991). These parenting behaviors, perceptions and goals have the ability to have a strong impact on child achievement and behavior, either positive or negative, depending on the goals and abilities of the child.

Despite common parent values and expectations for educational attainment, few studies have explicitly examined these values and their relationship with later academic achievement and behavioral outcomes. One study examining the indirect effects of parental expectations on later academic achievement (Davis-Kean, 2005) indicated that parental aspirations for their child's educational attainment was moderately correlated with later reading and math achievement. In addition, parental perceptions of attainment had a direct impact on academic achievement within European-American families. In African-American families, these perceptions had a direct impact on reading behaviors in the home, which then impacted academic achievement. This preliminary evidence indicates educational expectations and goals for achievement may have an effect on child

achievement and behaviors both directly and indirectly, making it an important factor for further study.

Demographic factors. Many demographic factors that are often outside of a child's control, such as racial background and family socioeconomic status (SES), have been identified within the literature as risk factors for later difficulty within the school environment, including low academic achievement scores, grade retention and high school drop-out (Rathbun, West & Walston, 2005). In 2007, over six million people ages 16-24 were defined as high school drop-outs; almost half of these students were either African-American or Hispanic, compared to 12% of white students, and the majority of students dropping out of high school come from low-income households (Center for Labor Market Studies, 2009). These students then have difficulty finding meaningful employment and over their lifetime, will "impose a net fiscal burden on the rest of society" (Center for Labor Market Studies, 2009, p.3). The long-term economic and social impact of poor educational achievement makes it necessary to give demographic factors, such as racial background and SES, proper attention when determining students and families who are at-risk and in need of more support within the school environment.

It is often difficult to discuss race and SES in isolation, as one risk factor is often associated with the other. Within a study on the cognitive and academic skills of entering kindergarten students, Lee and Burkam (2002) found that 34% of African-American and 29% of Hispanic children were in the lowest SES quintile, significantly higher than 9% of their white peers. Given the correlation between racial diversity and family SES,

studies reporting empirical evidence regarding the contribution of these factors on early risk will be presented in tandem within the remainder of this review.

A large number of researchers agree that the number of at-risk students continues to grow and school difficulty is much more likely to occur when children come from low income, racially diverse or linguistically diverse households (Snow, Burns & Griffin, 1998). Where debate occurs is in regard to whether or not differences in school performance should be attributed to demographic factors (such as race and SES) or educational factors. Those taking the first approach often argue that the context of race and SES within the family environment influences children's lack of educational opportunity from an early age. For example, many children who are racially diverse living in low income households often attend poor quality daycare or preschool settings early in life and are more likely to live in single-parent families where less attention may be given to educational involvement, academic expectations and cognitive stimulation in the home prior to school entry (Lee & Burkam, 2002). Others argue that the educational experience is the bigger culprit. As these children enter the formal school setting, they often attend poor quality schools with less qualified teachers. In addition, these schools then differentiate among educational potential throughout their schooling years by utilizing practices such as tracking, ability grouping, and placing students in special education courses. Minority students are often placed in these lower tracks, leading to lower expectations and fewer college preparatory courses.

Research designed to analyze these different perspectives has found contradictory results. While some have found few differences in early schooling that can be

contributed to race (Entwisle, Alexander & Olson, 1997), other research has argued that race does play a role in the significant differences found in cognitive and academic achievement of young children (Jencks & Phillips, 1998). In response to these conflicting results, recent studies utilizing the Early Childhood Longitudinal Study-Kindergarten sample (ECLS-K), a nationally representative sample utilizing a longitudinal design, have sought to determine the early cognitive and academic abilities of children, while also giving attention to the various combinations of demographic risk factors, to understand how children from various backgrounds differ from one another as they begin kindergarten.

Results indicate that children from racially diverse backgrounds, as well as those from low income households, do hold a cognitive disadvantage prior to starting school. Lee and Burkam (2002) found prior to kindergarten, children who come from low income households have significantly lower cognitive ability, as children from high SES homes have average cognitive scores that are 60% higher than the lowest SES group. The authors found that family SES is the largest social contributor to child cognitive abilities, accounting for more of the unique variation in test scores when compared to other social factors, such as cognitive stimulation in the home and racial background. Throughout elementary school, similar differences in cognitive skills are maintained, which the authors hypothesize to occur due to low quality schooling environments.

Academic disadvantages are also noted at school entry. In general, research has found that children living in low SES families have lower math and reading achievement scores at kindergarten entry compared with students who have no risk factors (Rathbun &

West, 2004). Specifically, Rathbun, West & Walston (2005) found that a child living in poverty has an initial reading score that is approximately six points lower than children with no demographic risk factors. In addition, racial differences are also noted as Lee and Burkam (2002) found math achievement scores to be approximately 20% lower for African-American and Hispanic students when compared to whites. These differences can be found at school entry and gaps in reading and mathematics achievement continue to widen throughout early elementary school (Downey, von Hippel & Broh, 2004; Rathbun, West & Walston, 2005).

Given that students from racially diverse backgrounds often come from low SES households and incur other simultaneous risk factors, researchers have investigated relationships between various combinations of demographic risk factors and later educational achievement. This cumulative risk approach is important, as Rathbun, West and Walston (2005) found that 76% of kindergarten students who lived in poverty had other pertinent family risk factors, including racial and linguistic diversity within the home. When analyzing various combinations of risk factors on achievement at school entry and academic growth over time, the authors found that children with a higher number of family risk factors, including living in poverty and in single parent, linguistically diverse homes, had lower achievement scores at school entry and progressed more slowly than children with low numbers of risk factors. When analyzing specific risk combinations, the study concluded that although children in single parent or linguistically diverse homes demonstrated lower achievement at school entry, they rebounded more quickly throughout early elementary school when compared to children

who lived in poverty or had parents with low levels of educational attainment. Living in poverty appeared to be one of the most significant risk factors, as even children with three to four other family risk factors had significantly better academic achievement at school entry and beyond when compared to children from low SES households (Rathbun, West & Walston, 2005).

In summary, it appears that demographic risk factors identified within the literature should be given attention when determining early risk status of children and families. In particular, low SES family status and racial diversity are two risk factors that often occur simultaneously and impact cognitive and academic skills at school entry (Lee & Burkam, 2002). In addition, these children often have more difficulty achieving academic growth comparable to peers with few risks, resulting in poor academic achievement throughout early elementary school (Rathbun, West & Walston, 2005; Downey, von Hippel & Broh, 2004). Given this knowledge, these risk factors are pertinent when attempting to understand early risk factors that impact children in the school environment. Given new research that focuses on the concept of cumulative risk, demographic risk factors should be conceptualized within the context of other risk factors. Details regarding this cumulative risk approach can be found within the next section.

The concept of cumulative risk

Empirical knowledge of risk factors within the family environment that are correlated with later academic and behavioral problems are important, as this knowledge enables researchers and practitioners to give further attention to children exposed to risk

factors within the home setting. However, given that at-risk children often exhibit more than one risk factor and these factors often occur simultaneously (e.g., see Sameroff, 2000 for an example), it is important to conceptualize risk as a cumulative phenomena, rather than singular.

The concept of cumulative risk was first identified by Rutter (1979) within his now infamous Isle of Wright study. While studying environmental risk factors of childhood psychiatric disorders, Rutter (1979) indicated that children who had an accumulation of co-occurring risk factors had an increased risk of later disorders, with no one single risk factor adequately predicting the presence of a later psychiatric disorder. Other studies of child risk factors and later outcomes (e.g., Sameroff, 2000; Sameroff, Bartko, Baldwin, Baldwin & Seifer, 1998) support this notion, as the probability of later problem behaviors or diagnosable psychological conditions increases exponentially as children were exposed to more environmental risk factors.

Despite the importance of this knowledge, conceptual flaws still exist within the conceptualization of cumulative risk. Researchers often prioritize the number of risk factors that an individual has experienced by explaining that the addition of risk factors is linked to an increase in problem behaviors, as children with two risk factors, for example, are more likely to have a disorder when compared to a child with one risk factor. As the number of risk factors increases, so does the probability of a disorder or psychological concern (Rutter, 1979). In addition, a threshold effect is often identified, as research has indicated that after a certain number of risk factors is reached (e.g., four risk factors), the risk of mental disorders increases dramatically when compared with lower number of risk

factors (Biederman, Milberger, Faraone, Kiely, Guite & Mick et al., 1995; Jones, Forehand, Brody & Armistead, 2002). However, this variable-driven approach places more importance on the number of risk factors, rather than the severity or combination of risk factors, which places the focus on understanding single factors, without proper attention given to the simultaneity of risk factors and the larger context of the individual (Stattin & Magnusson, 1996).

To improve upon this conceptualization of cumulative risk, many researchers have begun to promote person-centered approaches when analyzing risk (Cicchetti & Rogosch, 1996). These approaches place a focus on an individual's experience of risk and identify subgroups within a larger sample with similar experiences on specific variables of interest, which allows researchers to conceptualize how risk factors function differently across various groups. This creates a richer, more comprehensive understanding of how risk factors affect later outcomes for different individuals based on experience, rather than using risk factors to drive methods and subsequent analysis (Beitchman, Adlaf, Atkinson, Douglas, Massak & Kenaszchuk, 2005). Future analysis of numerous risk factors utilizing person-centered approaches would improve upon current empirical knowledge by conceptualizing risk from the perspective of the individual, rather than the power of the variable.

Effectiveness of early intervention and prevention methods

Current research has made great strides in understanding the risk factors, specifically those within the family environment, associated with negative child outcomes. Developmental and prevention science research utilizing gold-standard

experimental designs and advanced modeling statistics have indicated that early intervention methods are most beneficial in the prevention of child academic and behavior problems (Weissberg et al., 2003), making it important to extend the focus of research and practice from identifying risk factors predictive of negative outcomes to establishing evidence-based early intervention and prevention methods to promote positive child outcomes. A brief overview of effective early intervention and prevention methods for academic and behavior concerns will be presented within the following sections.

Early intervention with a focus on academic achievement. With the passage of the *No Child Left Behind Act* (NCLB, U.S. Department of Education, 2001), schools are being forced to think about accountability and ensure that all children are learning and progressing in their education. This focus on objective data-based decision making, early intervention and prevention, and the use of research-based instruction practices has surfaced due to flaws within historical views of academic achievement and current legal mandates.

Historically, models of achievement and student progress assumed that students were progressing normally until otherwise noted, often utilizing subjective feelings or instincts of the teacher to make decisions about student progress (Fletcher, Coulter, Reschly & Vaughn, 2004). This model, often termed "wait to fail", did not provide students with intensive intervention until their academic achievement was significantly below that of their peers. Once this discrepancy occurred, students were often diagnosed with learning disabilities and given special education services to remediate their

academic skills; however, this model of identification did not result in increased academic skills for these students, as many showed few gains and rarely exited special education services (Donovan & Cross, 2002; Lyon, Fletcher, Shaywitz, Shaywitz, Torgesen & Wood et al., 2001). Chard and Kame'enui (2000) found that students who exhibit delayed reading achievement at the end of third grade show little significant reading growth into eighth grade and beyond; this knowledge highlighting the importance of early intervention and prevention has forced schools to take an alternative approach to early intervention by utilizing alterative instructional and decision-making practices to identify problem learners as early as possible.

From a legal perspective, current educational legislation, such as the *No Child Left Behind Act* (NCLB; Department of Education, 2001) and the *Individuals with Disabilities Education Improvement Act* (IDEIA; U.S. Department of Education, 2004) provides statutes and mandates regarding early intervention and prevention. Within the NCLB legislation, two important mandates are relevant. First, schools receiving federal funds must utilize evidence-based practices to improve academic outcomes for all students, and second, schools and states must utilize progress monitoring tools to ensure that academic programs and curricula are advantageous and effective in meeting the learning needs of students (Brown-Chidsey & Steege, 2005; U.S. Department of Education, 2001). Because early intervention and prevention practices, such as universal screening utilizing curriculum-based measurement (CBM) tools and progress monitoring of students receiving supplemental research-based intervention strategies, have been proven effective in improving academic achievement (Deno, 2003; Fuchs & Fuchs, 2002;

Good, Simmons, Kame'enui, 2001), the need for implementation of these practices is compatible with legal statues, making it a valuable approach for legal compliance as well as to improve student outcomes.

Within special education law, the newest revision of IDEIA established in 2004 (U.S. Department of Education, 2004) defines an alternative approach regarding the procedures schools can use to identify students with learning disabilities. Due to problems with the "wait to fail" model (Fletcher et al., 2004), Response to Intervention (RTI) practices can be used to determine a student's eligibility for special education services (U.S. Department of Education, 2004). Within a three-tier RTI model, schools must first utilize an evidence-based curriculum for all students, ensuring that general education teaching tools and practices are based on sound empirical research and all students have an opportunity to learn. Using data gathered from CBM screening measures administered to all students, those students that are not performing at expected levels would be identified for Tier 2 services, indicating that alternative research-based interventions must be used to supplement the classroom curriculum. Schools must evaluate how students respond to these interventions, with an emphasis placed on data-based decision making for instructional planning and education decision making. For those students not benefiting from the supplementary intervention, this data, along with other appropriate evidence, can be used to determine the presence of a learning disability and the need for special education, or Tier 3, services (Brown-Chidsey & Steege, 2005).

This RTI model promotes early intervention and prevention practices, as all children are exposed to quality academic instruction and curricula, screened using

technically adequate tools to determine performance, given evidence-based alternative instruction practices if academic achievement is below expected standards, and monitored frequently to determine progress and needed instructional changes (Brown-Chidsey & Steege, 2005). Although the use of these practices is not universal across all schools, it is evident that within academic settings, the use of these early intervention and prevention practices promoted by an RTI model has beneficial outcomes for student achievement, particularly those at-risk, as they receive quality instruction and research-based interventions as soon as they begin to exhibit concerns, changing their academic and behavioral trajectories (Tilly, 2003; Torgeson, 2003).

Early intervention with a focus on child behavior. According to the newest Institute of Medicine report (2009), the prevalence estimates of children and adolescents diagnosed with one or more behavioral, mental or emotional disorders is approximately 17%. The amount of children affected, particularly those with severe concerns and who are unable to access mental health treatment, leads to many current and long-term concerns, including individual suffering, problems with social, occupational, and educational functioning and attainment, societal burden due to unemployment, crime, divorce and poverty, and the increased chance of more severe mental health problems throughout their life course (Smit, Cuijpers, Oostenbrink, Batelaan, de Graaf & Beekman, 2006).

Due to the high rates of mental health problems within young people and the known life course if these problems are not addressed, early intervention and prevention practices are needed to produce optimal outcomes, rather than waiting to provide

intervention until symptoms meet criteria for a diagnosable condition. A study by Costello, Angold, Burns, Stangl, Tweed and Erkanli et al. (1996) indicated that within children, both externalizing (e.g., ADHD, disruptive and aggressive behaviors) and internalizing concerns (e.g., anxiety, depression) can have early onset of symptoms in children; however, the time between the onset of symptoms and the symptoms becoming a full diagnosable disorder has been found to be approximately 2-4 years. This large time frame leaves ample time for service providers to intervene and alter trajectories, making the identification of early risk factors and symptoms, screening measures for identification, and evidence-based prevention and early intervention practices a necessary focus within both research and practice.

Beyond the logical mindset that early intervention and prevention practices should be utilized with children exhibiting behavioral and emotional concerns, research has indicated that these methods are best practice for reducing problematic behaviors and symptoms. Within a meta-analysis of primary prevention programs targeting children and families, Durlak and Wells (1997) highlight the effectiveness of these programs in producing positive outcomes, with effect sizes ranging from 0.24 to 0.93. Program evaluation outcomes indicated a reduced rate of internalizing and externalizing concerns in children, as well as increased academic achievement for participants; these findings were upheld with participants who were not experiencing clinically significant concerns, indicating that prevention and early intervention activities can improve functioning for both minor and more severe concerns. Most importantly, these prevention and early intervention activities had comparable outcomes and effect sizes compared to other more

intensive interventions delivered after a problem is of significant concern, highlighting the importance and value of prevention services.

Research points to numerous specific programs and interventions that have had success in reducing problematic behaviors, while increasing social skills and positive behaviors, by providing early services to children and families. In addition, these programs have begun to span multiple childhood environments, including family and school, based on the knowledge that best practice involves a systemic approach aimed at changing the environments in which children live, learn and grow (Greenberg, Domitrovich, & Bumbarger, 2001). Utilizing this theoretical approach, Webster-Stratton and Taylor (2001) reviewed a number of empirically supported intervention programs aimed at altering parenting behaviors, child behaviors, and the classroom environment, all of which have been shown to be effective in improving child behavior. In addition, interventions that address multiple systems within a single program, such as the Incredible Years (Webster-Stratton, 1984), have positive outcomes in reducing negative parent discipline practices, while increasing positive child social skills and positive teacher classroom management behaviors.

The prevention and early intervention of child behavior concerns is clearly highlighted by the literature as best practice to prevent long-term negative outcomes for children, families, and societies. With increased knowledge about early risk factors that affect child behavior and academic concerns, as well as the familial factors that influence child development at an early age, intervention programs targeting families and schools simultaneously appear to be an attractive option to alter the developmental trajectory of

children at-risk of later problems. To specifically highlight these programs, the next section will focus on family-based interventions and the research supporting their use in reducing problematic child behaviors and increasing necessary skills needed for school success.

Effectiveness of family intervention for child concerns

The effects of early intervention and prevention in the remediation of child academic and behavior concerns have been identified through the literature as best practice to produce optimal outcomes for children. Due to the identification of these best practices, empirical knowledge regarding family risk factors, and their association with detrimental child outcomes, a growing movement has utilized family interventions, rather than individual child interventions, to reduce child academic and behavior concerns. By working with family members and involving parents in the treatment process, risk factors present in the family environment are more likely to be malleable, which shapes the environment and the interactions parents have with their children, thus increasing the likelihood that children will change their behavior and be reinforced appropriately within their everyday environment (Webster-Stratton & Taylor, 2001).

The majority of effective family-based interventions have focused on the modification of parenting practices utilizing a social learning theory perspective (McMahon & Forehand, 2003). Programs focused on helping parents learn better practices to manage child behavior are based on the clinical assumption that traditional individual psychotherapy for child behavior problems is rather ineffective. Instead, teaching parents how to build positive relationships with their children, give positive

attention to prosocial behaviors, and manage negative behaviors is the primary focus of therapy within this perspective, based on research that many children with behavior problems often have parents utilizing poor parenting practices, including inconsistent directions, unclear expectations, negative interactions, inconsistent discipline and few positive consequences for desired behaviors (Chamberlain et al., 1997).

Utilizing this philosophy, parent training programs, such as the Incredible Years (Webster-Stratton, 1984) and parent-child interaction therapy (Eyberg, Boggs & Algina, 1995) delivered in both group and individual formats have been proven to reduce problematic child behaviors that persist over time (Nixon, Sweeney, Erickson, & Touyz, 2003; Webster-Stratton & Hammond, 1997) across community and clinical settings (Miller & Rojas-Flores, 1999; Taylor, Schmidt, Pepler, & Hodgins, 1998). Positive child behaviors also transfer to other environments, such as increased compliance in school and with other adults (Breiner & Forehand, 1981), as well as to other children in the family who are untargeted, such as siblings (Brotman et al., 2005). Other programs targeting family functioning in the school setting, such as the Family Check-Up (Dishion & Kavanagh, 2003) and the Iowa Strengthening Families Program ((ISFP; Molgaard, Kumpfer, & Fleming, 1997) also show positive impacts on child behaviors, including decreased involvement with deviant and delinquent peers (Stormshak, Dishion, Light, & Yasui, 2005), less substance use (Connell, Dishion, Yasui, & Kavanagh, 2007), reductions in disruptive behavior (Shaw et al., 2006), and increased student engagement, leading to long-term academic success (Spoth, Randall & Shin, 2008).

The empirical literature clearly indicates the effectiveness of family-based interventions for child academic and behavior problems, primarily because intervention effects extend into the family environment by helping not only the target child, but also improving other areas of overall family functioning, such as parent-child relationship quality, parental support and warmth, parental discipline practices, and sibling behavior. Although traditional child-centered approaches and individual therapy may yield results for the individual child, studies have shown that these results have little impact on the overall family functioning, which is needed in children exhibiting severe behavioral and academic problems (Kazdin, 1987)

Family-based interventions also have long-lasting effects, leading to better outcomes for families and children long after the initial treatment. Individual treatments focus on changing the internal characteristics, behaviors and thought patterns of the child. Once a child completes treatment, they remain a part of the same home and family environment, which are often not structured to maintain improvements and provide favorable outcomes. In family-based interventions, not only are children affected, but the family system and the overall home environment are restructured as well. Parents learn skills and techniques that were previously unknown, such as discipline strategies, behavior management, and positive and negative reinforcement. These skills shape the environment in which the child lives on a daily basis, therefore helping them succeed with treatment goals. By shaping the environment, children have structural supports in place that help them transfer and generalize their behaviors, which leads to better outcomes and long-term effectiveness (Brotman et al., 2005).

These effectiveness results are particularly true when treatment and prevention occur at earlier ages. Preschoolers exhibiting early signs of disruptive and oppositional behaviors who have received family-based treatment early in life, such as the Incredible Years parent training program, show decreased levels of externalizing behaviors at 1 year follow-up (Webster-Stratton, Hollinsworth & Kolpacoff, 1989). Conversely, adolescents engaged in family-based treatment for juvenile delinquency initially exhibit small, positive changes, but these changes do not persist over time (Bank, Marlowe, Reid, Patterson & Weinrott, 1991) and often escalate after adolescents reintegrate into their original family and community environments due to engrained family interaction patterns (Jones, Weinrott & Howard, 1981). These results indicate that psychologists, school personnel and other professionals working with children must actively work to identify children earlier and start the process of family work early in the cycle to prevent negative patterns of behavior.

The state of kindergarten screening

Research indicates that entering kindergarten students exhibiting behavioral difficulties and lacking knowledge of basic learning concepts are more likely to continue on a negative path toward academic problems, disengagement from the school setting, and externalizing behavior concerns (Ladd & Coleman, 1997). Due to the need for early intervention, schools have begun utilizing screening methods when children enter kindergarten to identify those students who are not developing appropriately and need intervention services to make appropriate gains. From a theoretical perspective, the majority of kindergarten screening takes a maturational approach, which assumes that

children who have advanced cognitive, motor, language, adaptive, and behavioral skills are more likely to succeed in the classroom (Rimm-Kaufman & Pianta, 2000). Although extensive literature exists regarding the predictive validity of early within-child characteristics and later school outcomes (see Christian, Morrison & Bryant, 1998; Walker, Greenwood, Hart & Carta, 1994), this close examination of individual child skills accounts for less than 25% of the variance in kindergarten adjustment and academic success (LaParo & Pianta, 2000), making it necessary to investigate and measure other factors influencing child development.

Due to the limited focus of traditional screening practices, researchers have called for a different paradigm to guide knowledge and understanding of kindergarten screening. A transactional approach toward school readiness and kindergarten screening has been proposed (Carlton & Winsler, 1999), which involves understanding individual child skills that are needed to be successful within the school environment, as well as critically examining multiple contexts and their ability to support student development and growth. This model incorporates a family systems approach, as it recognizes that the home environment plays a large role in the development and growth of child skills; therefore, this environment must be given proper attention in identifying at-risk children prior to school entry (Rimm-Kaufman & Pianta, 2000).

Despite advocates for a theoretical shift, research on current screening practices indicates that many schools continue to take a narrow view of what is needed to succeed in kindergarten and beyond. The most recent comprehensive analysis of kindergarten screening, conducted by Costenbader et al. (2000), examined the practices of

approximately 400 schools across the country. Results indicated that the majority of schools conceptualized kindergarten screening as the measurement of individual child skills using locally developed screening measures, standardized tests and a combination of measures. Measures being used by participating schools failed to utilize a systemic approach to examine family or other environmental risk factors that may affect child development. During screening, children were reportedly assessed individually for approximately 20-30 minutes with the help of a variety of professionals. If children were deemed to be "at-risk" based on these screening measures, respondents reported a variety of follow-up procedures, including further evaluation, close monitoring in kindergarten, delay of school entry, summer programs to enhance skills before kindergarten, or a follow-up screening. Few districts acknowledged placing the child in an early intervention program to remediate skills or targeting environments, such as the family, at the systemic level to impact child outcomes.

The implementation of current kindergarten screening practices used around the country raises several issues and limitations. First, different methods were reported by various schools, including locally developed measures, standardized measures, and a combination of multiple assessments, indicating that many schools are using very different methods to assess students (Costenbader et al., 2000). Hypothetically, based on the measure being used, a student could be identified as typically developing in one district and at-risk in another, which highlights the need for universal kindergarten screening practices that identify evidence-based risk factors that are predictive of later negative outcomes.

Along with inconsistent methods, schools reported the use of many assessment tools that are not technically adequate for kindergarten screening purposes. This is particularly concerning as the goal of kindergarten screening is to employ measures that have high levels of sensitivity, specificity and predictive validity for two reasons. First, measures should be sensitive to catch students who are at-risk, as well as specific enough to distinguish between those who are at-risk and those who are not. Second, those who are identified should have a higher likelihood of later negative outcomes compared to children who are not identified. Within the aforementioned study, many assessment tools that participants reported using during kindergarten screening did not meet this criterion. For example, the DIAL-R, used by 26% of participants, has a predictive value of 0.53, indicating that 53% of children identified by the instrument experience later academic problems; the other 47% of identified children go on to have no problems at all (Jacob, Snider & Wilson, 1988). This is particularly problematic due to the amount of time and resources devoted to kindergarten screening, which often results in an approximate 50/50 chance of correct identification. Other commonly used measures, have similar problems; the Brigance screening tool (Brigance, 1991) lacks reliability and validity data (Wenner, 1995) and low predictive validity (Graue & Shepard, 1989), while the Gesell School Readiness Test (Ilg & Ames, 1972) does not identify adequate norms regarding appropriate scores (Bradley, 1992). These measurement issues, along with the lack of available technically valid measures, makes it difficult for schools to make decisions regarding the identification and intervention needs of entering students.

Overall, it appears that screening practices often ignore important family-based risk factors, as most screening instruments utilized by schools take the maturational approach, focusing on individual child skills. However, literature has highlighted the effect of family and environmental risk in the development of child academic and behavior concerns; most notably, 30-40% of the variance in child behavior, which is highly correlated with academic achievement, can be accounted for by family factors, most notably discipline and interaction practices (Patterson et al., 1989). Based on this knowledge, along with the technical inadequacy of many current child screening tools, a variety of measures analyzing family-based risk factors, such as home visits, parental interviews and questionnaires (Carlton & Winsler, 1999) is likely to be helpful within the kindergarten screening process. These measures would allow school professionals to understand how these factors influence child skills and other variables needed for school success, such as parental involvement in education and collaborative relationships with teachers. Once these variables are understood, schools can adequately identify at-risk students and begin to provide family-based interventions within the school setting to address existing risk factors.

Family intervention efforts within schools

Student needs continue to increase, causing schools to examine how their policies, practices and environments support at-risk students. For example, researchers estimate that approximately 20% of students have significant reading problems (National Center for Education Statistics, 2000) and 16% of students live in poverty (U.S. Census Bureau, 2000). From a transactional perspective, both individual child problems, the

environments in which children live, and the reciprocal relationship between the two are important factors that merit attention. From a school perspective, this means: (1) developing intervention programs for students; (2) understanding how environmental risk factors, such as those found within the family environment, contribute to student difficulties; and (3) developing family intervention efforts within the school setting (Adelman & Taylor, 2006).

Due to the increase in student needs and increased environmental risk factors that affect child academic achievement and behavior, many advocates have begun pushing for the advancement of school-based mental health models to support the needs of children and families. Weist, Paternite & Adelsheim (2005) define crucial elements of school-based mental health services including: partnerships among schools, families and community agencies; a variety of mental health services, ranging from health promotion to evidence-based treatment; and services to all children, independent of their educational status (e.g., general education vs. special education vs. alternative school). These efforts can be achieved through existing programs, additional elements for use within existing programming, and new programming delivered within the school setting through the collaborative efforts of school-based professionals and community supports.

Currently, many schools are attempting to utilize elements of school-based mental health models to increase supports for students. Adelman & Taylor (2006) describe the status of current school-based mental health efforts, which vary drastically across schools and states in terms of the context of delivery (e.g., the entire district vs. a particular school within the district), targeted students (e.g., all students in the school vs. those at-

risk or exhibiting concerns), and intervention context (e.g., pull out services for groups of students vs. entire classroom intervention). In their summary, they acknowledge that few school resources are devoted toward health promotion or primary prevention activities, as the majority of services can be defined as direct intervention supports to alleviate the mental health and academic needs of individuals or small groups of students.

Although schools attempt to increase their mental health services for students, many schools fail to address the critical element of family, school and community partnerships, particularly working effectively with families before child problems escalate (Fox et al., 2002). Instead, schools tend to funnel their services and supports toward children with the aid of community agencies, while giving little attention to the contexts and environments in which children live. Given the association between early family risk factors and later negative outcomes (see Patterson et al., 1989), it seems evident that schools should begin to expand their mental health efforts to include family interventions in the school setting. This addition of family services would allow schools to become more systemic focused, multi-faceted, and research-driven in their intervention approach (Adelman & Taylor, 2006), given that most child problems are the result of numerous risk factors and family-based interventions have high levels of support in terms of overall efficacy and effectiveness.

However, the implementation of family-based interventions in the school setting has not advanced due to various reasons that must be acknowledged and addressed. First, due to problems with poor kindergarten screening practices, including invalid measures with poor predictive validity (see Graue & Shepard, 1989) and lack of attention to

environmental risk factors (see Carlton & Winsler, 1999), schools have difficulty identifying which children and families to target for intervention. Due to the complexity and effort needed to implement family-based interventions successfully, effective screening practices must be expanded to ensure that the correct families are being targeted.

In addition to poor screening practices, many school-based professionals, including school psychologists, school counselors, teachers, nurses and administrators, do not have adequate knowledge regarding evidence-based practices that could be used in the school setting to intervene with families, even with child problems that are commonly seen in the school setting such as ADHD (Jones & Chronis-Tuscano, 2008). In addition to a lack of knowledge, even the best evidence-based interventions that have been clinically proven, may have issues of transportability and sustainability in the school setting, as many are not tested or implemented within real world settings during research or clinical trials (Shirk, 2004), making it difficult for school-based professionals to implement them as written.

Other institutional barriers make the implementation of family-based interventions difficult for schools. Limited financial and staff resources force schools to choose programs that are feasible and easily sustained, despite their level of effectiveness (Adelman & Taylor, 2006). School psychologists who have the ability to implement interventions often face high student ratios, leading them to engage in other necessary activities, such as assessment for special education eligibility, which prohibits them from becoming leaders in systemic change priorities. (Fagan & Wise, 2000). In addition,

policies at the district level may be incompatible with practice, as districts may identify the needs of families as a top priority, but inactively contribute to continued practices by failing to provide needed resources to schools (Adelman & Taylor, 2006).

Due to the barriers that exist, researchers have begun investigating options to help professionals incorporate family-based programming into the school setting. One option is including family-based interventions into existing school-wide programming to enhance student behavior and academic achievement. Reinke, Splett, Robeson & Offutt (2009) propose the addition of the Family Check-Up to existing PBS programming in schools, which would include universal support for all families, an assessment of family functioning for at-risk students, and intensive interventions for families exhibiting the most problematic concerns. For those schools interested in implementing new mental health programming, Adelman & Taylor (2006) propose a systematic plan that can be utilized in schools to assess school readiness for change, pilot implementation, continue to enhance and adapt programming to meet student and school needs, and ongoing evaluation. Due to the importance of family interventions and the lack of school resources, these options have the potential to be alternatives for schools to move forward and advance their mental health infrastructure and programming to meet increasing student needs.

Summary

Research has defined a pathway for children exhibiting early academic and behavioral issues. Children who continue to exhibit these problems beyond school entry are at increased risk of later negative outcomes, including poor academic achievement,

association with deviant peers, disengagement from school, increased delinquency and antisocial behavior, and lack of educational attainment (see Patterson et al., 1989). To identify children who are at increased risk at earlier ages, the family context should be given adequate attention, as it has been proven to be a malleable risk factor to alter the trajectory of child development. Risk factors that should be given particular attention include discipline practices (e.g., Chamberlain et al., 1997); the home environment (e.g., Bradley & Caldwell, 1982); parental mental health (e.g., McCarthy & McMahon, 2003); parental involvement in the school setting (e.g., Dornbusch et al., 1987); and parental perceptions of education (e.g., Bronstein et al., 2005).

The best outcomes for children are seen when early intervention and prevention efforts are utilized to address both early academic and behavioral concerns (Weissberg et al., 2003). Due to the importance of the family environment at early ages (Broffenbrenner, 1979), the use of family-based interventions have been used to change family practices and the overall environment in which children live and develop, which increases the likelihood that positive child behaviors and skills will be reinforced within environments (Webster-Stratton & Taylor, 2001). Because schools are seen as an optimal place to provide such interventions, literature has examined the use of kindergarten screening practices to identify at-risk children, as well as the current implementation of family-based interventions in school setting. Problems are clearly evident that prohibit schools from implementing these interventions successfully, including lack of knowledge regarding evidence-based interventions (Jones & Chronis-Tuscano, 2008), difficulty successfully implementing gold-standard treatments in

practical settings (Shirk, 2004) and institutional barriers (Adelman & Taylor, 2006). However, before these barriers can be addressed, schools must first understand how to effectively identify at-risk students in need of interventions by enhancing their kindergarten screening practices to include adequate measures with high predictive validity (see Costenbader et al., (2000) for measurement issues),

Findings from the literature regarding the importance of family risk factors, early intervention, and family-based interventions in the remediation of child academic and behavioral concerns, as well as current problems with kindergarten screening and feasibility of family-based treatment necessitate the need for further examination of collective family risk factors that are evident within entering kindergarten students. This knowledge will not only expand the literature regarding family risk and how risk occurs collectively within individuals, but will also allow schools to understand particular risks that should be given attention within the family context, which can enhance current screening practices and lead to increased supports for families in the school setting.

Purpose of the study

The purpose of this study extends across three focal areas. First, this study extends the empirical literature regarding early family risk factors to understand how cumulative risk manifests within profiles of entering kindergarten students. Second, risk profiles were examined to understand how groups of students are distinct from one another in terms of early family risk factors, extending knowledge of early screening practices and factors that should be given proper attention to identify at-risk children. Third, these distinct profiles of students were examined longitudinally to determine how

group membership is associated with later academic achievement, internalizing behavior concerns and externalizing behavior concerns. Family risk factors observed within kindergarten students are used as predictor variables, as the home environment is the most influential learning system for children prior to school entry. Specifically, early experiences (e.g., discipline practices, the home environment, parent mental health, parental involvement in education, and parental perceptions of education) were given increased focus within the study, as they reflect a life course, family systems perspective necessary for an optimal transition to kindergarten and have the potential for change within early intervention and prevention efforts. Third grade outcomes were selected because they represent a crucial developmental transition, as students move from guided instruction in reading and behavioral skills to increased responsibility and expectations to exhibit and utilize these skills independently in the school setting.

Research Questions

Specifically, this study addresses the following research questions:

1. What number and types of low income family profiles will emerge from each racial/ethnic subsample?

2. Are there significant differences among the kindergarten, low income family profiles when examining negative third grade outcomes, including decreased reading performance, increased externalizing behaviors, and increased internalizing behaviors?

CHAPTER 3: RESEARCH METHODS

Data source

Data for this study was taken from the Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K). The ECLS-K is a large, nationally representative sample utilizing a longitudinal design to follow approximately 22,000 kindergarteners throughout elementary and middle school. Data was collected beginning in the 1998-1999 school year and children were followed through the eighth grade (2006-2007). Seven total data points were collected for each child (fall and spring of kindergarten, fall and spring of first grade, spring of third grade, spring of fifth grade, and spring of eighth grade). The purpose of the ELCS-K was to: (1) examine child academic achievement and development across multiple contexts, including the school, family and community; (2) examine the relationships among child contexts (e.g., relationship among school and family); and (3) examine the degree to which early childhood behaviors lead to various later outcomes.

Sampling methods used within the ECLS-K ensured that the respondents were representative of students in schools across the country based on the variables of geographical region, community type, school size, school type and race/ethnicity. In addition, oversampling was done of some ethnic groups, specifically children identifying as Asian or Pacific Islander, to allow for analyses on traditionally understudied subgroups. Data collection spanned multiple child environments, such as homes and schools, and information was completed by various respondents, including the children,

parents, teachers and school administrators. Children were also given direct assessments by trained professionals to assess their language development, reading, mathematics and science achievement, general knowledge, motor skills, and physical development. Beyond child development and academic achievement, additional data measured aspects of the home, school and classroom environments, as well as family characteristics (Westat, 2000).

Sample

For the purpose of this study, data from the parental interview at the beginning and end of the child's kindergarten year, as well as outcome data from the end of third grade, was used to derive an initial sample (n=17,401). Cases that had all data missing from the kindergarten year were deleted (n=2,463), as this indicated that these cases had not been sampled during the initial year of data collection, resulting in a kindergarten sample for further analysis (n=14,938).

This kindergarten sample (n=14,938) was used to analyze missing data, specifically to determine if data was missing at random based on the demographic variables of child race, child gender and family income status. For missing data analysis, all risk factor scales were used; cases were coded "1" if a meaningful data point was available and "0" if data was coded as "system missing", "refused" or "don't know". A one-way ANOVA and post-hoc analysis was done using child race, child gender and family income as independent variables and each risk factor and outcome scale as dependent variables to determine patterns of missing data.

Analysis indicated significant differences within risk factor and outcome scales. Specifically, those with household incomes within the first and second quintiles of the sample (lower 40%), as well as those identified as ethnic minorities, multiracial, or an unknown race, with the exception of Pacific Islanders and Hawaiian natives, were significantly more likely to have missing data or reported "refused" or "don't know" within each of the kindergarten risk factors scales, as well as having missing data on outcome scales within the third grade year (all p's <.05). Therefore, the inclusion of family income level and race were intended for use as covariates within the original analysis plan.

Due to mixed results within the latent profile analysis because of the large, diversified sample (which are described in detail below), a more homogenous sample of low income students were identified and extracted from the kindergarten sample. A low income sample was selected, given the empirical literature that exists stating that children who grow up within lower socioeconomic status homes have a larger disadvantage than their peers when starting school, both cognitively and academically (Lee & Burkham, 2002). The low income sample utilized within the study consisted of students whose parents reported their family socioeconomic status to fall within the first or second quintile during the kindergarten year (n=5,431). In addition, due to the need to conduct a multiple group analysis based on race given the importance of this variable (details of how this decision was made are described later in this section), three racial groups (Caucasian, African-American and Latino) of low income students comprised the final sample for in-depth analysis. These three groups were selected given that they comprised

the largest percentage of the low income subsample. This resulted in the final sample for latent profile analysis (n=4,821; Caucasian=2,154; African-American=1,136; Latino=1,531). Demographics of the final sample, taken from information given at the time of the initial interview, are located in Table 1.

Table 1: Demographics of the final sample

Demographic variable	**Category**	**Caucasian N (%)**	**African-American N (%)**	**Latino N (%)**
Child gender	Male	1,122 (52.1)	559 (49.2)	784 (51.2)
	Female	1,032 (47.9)	577 (50.8)	747 (48.8)
Child Age		*M*= 5.35 years SD= 0.48 Range = 5-7 years	*M* = 5.30 years SD= 0.46 Range = 5-7 years	*M* = 5.23 years SD= 0.42 Range = 5-6 years
Family income	First quintile	643 (29.9)	667 (58.7)	1178 (76.9)
	Second quintile	1,511 (70.1)	469 (41.3)	353 (23.1)

Measures

Risk factors. Risk factors identified for use in the study included: parental involvement in education, harsh discipline practices, value of school readiness, and educational aspirations for the child, the overall home environment, and parent well-being. These risk factors were identified within the empirical literature as early family factors indicative of later childhood problems, including poor academic achievement and increased levels of behavior problems. The majority of risk factors were comprised of multiple questions and compiled into a scale demonstrating adequate reliability. Items used to create risk factor scales were all taken from parental interviews during either the fall or spring of the child's kindergarten year. Specifics of the risk factor scales are

described below. Means, ranges and standard deviations of each risk factor scale for each racial group can be found in Table 2.

Parental involvement in education. The parental involvement scale (=0.74) reflected active parent involvement by measuring the number of school events parents have participated in at their child's school during the kindergarten year. It consisted of seven questions, all asking "Since the beginning of this school year, have you or the other adults in your household: (1) attended an open house or back to school night?", (2) attended a meeting of a PTA, PTO, or Parent-Teacher Student Organization?", (3) gone to a meeting of a parent advisory group or policy council?", (4) gone to a regularly-scheduled parent-teacher conference with your child's teacher or meeting with your child's teacher?", (5) attended a school or class event, such as a play, sports event, or science fair?", (6) acted as a volunteer at the school or served on a committee?", and (7) participated in fundraising for your child's school?" Responses were dichotomous, as parents were expected to answer either "yes" or "no." Within scale development, cases coded as "refused", "not applicable", and "not ascertained" were identified as missing. Those who responded "don't know" were recoded as "no", given the likelihood that parents who were unsure if they had participated in these activities likely had not. All seven items were summed to create the scale, with higher scores reflecting more active parent involvement within the educational setting.

Harsh discipline. The harsh discipline scale (=0.98) measured the amount of negative discipline practices the parent would hypothetically use to manage their child's negative behaviors. It consisted of four questions, all asking "Most children get angry at

their parents from time to time. If your child got so angry that he/she hit you, what would you do? (1) Spank your child?", (2) Hit him/her back?", (3) Make fun of him/her?", or (4) Yell at your child or threaten him/her?" Parents were asked to respond dichotomously, with either "yes" or "no" to each option and could indicate the use of multiple practices. Within scale development, cases originally coded as "refused", "don't know", "not applicable" or "not ascertained" were recoded as missing. The four items were summed to create the initial scale, with higher scores reflecting the use of multiple negative discipline practices.

Given that the majority of parents reported using very few negative discipline practices, the initial scale had a very high non-normal distribution. Within the original latent profile analysis, system warnings cautioned the use of this scale, given its high levels of skewness and kurtosis. Therefore, the scale was transformed into a dichotomous coding for final analysis, with parents who reported the use of only positive discipline practices coded as "0" and parents who reported the use of any negative discipline practice coded as "1."

Value of school readiness. The school readiness scale (α=0.81) measured the parent's view of important skills a child should exhibit before entering kindergarten. It consisted of six questions, all asking "How important do you think it is that a child: (1) can count to 20 or more?", (2) takes turns and shares?", (3) is able to use pencils and paintbrushes?", (4) sits still and pays attention?", (5) knows most of the letters of the alphabet?", and (6) communicates needs, wants, and thoughts verbally in his/her primary language?" Parents could respond with "not important" (1), "not very important" (2),

"somewhat important" (3), "very important" (4), or "essential" (5). Within scale development, cases originally coded as "refused", "don't know", or "not ascertained" were recoded as missing. The mean of the six items was used to create the scale, with higher scores reflecting the parental view that the majority of skills are essential for formal school entry.

Educational aspirations. The educational aspirations scale measured the level of education the respondent expected their child to receive. It consisted of a single question, asking "How far in school do you expect your child to go?" Parents were given the following response choices: "less than high school" (1), "graduate from high school" (2), "attend two or more years of college" (3), "finish a four or five year college degree" (4), "earn a master's degree or equivalent" (5), or "finish a Ph.D., M.D., or other advanced degree" (6). Within scale development, cases responding "refused", "don't know" or "not ascertained" were coded as missing. Higher scores reflect higher educational aspirations for the child.

Home environment. The home environment scale (□=0.79) reflected the amount of cognitive stimulation within the child's home. It consisted of seven items, all asking "In a typical week, how often do you or any other family member do the following things: (1) read books to your child?", (2) tell stories to your child?", (3) sing songs with your child?", (4) help your child with arts and crafts?", (5) play games or do puzzles with your child?" (6) build something or play with construction toys with your child?", and (7) look at picture books outside of school?" Parents could respond with "never" (1), "once or twice a week" (2), "3-6 times a week" (3), or "everyday" (4). Cases originally coded

as “refused”, “don’t know” or “not ascertained” were recoded as missing. The mean of the seven items was used to create the scale, with higher scores reflecting a more stimulating home environment where parents are engaging their child in a majority of these activities on a daily basis.

Parent depressive symptomotology. The parental depressive symptomotology scale (□=0.85) measured the amount of depressive symptoms exhibited by the parent within the past week. It consisted of twelve questions, all asking “How often during the past week have you: (1) felt that you did not feel like eating, that your appetite was poor?”, (2) felt that you could not shake off the blues even with help from your family or friends? ”, (3) felt that you had trouble keeping your mind on what you were doing?”, (4) felt depressed?”, (5) felt that everything you did was an effort?”, (6) felt fearful?”, (7) felt that your sleep was restless?”, (8) felt that you talked less than usual?”, (9) felt lonely?”, (10) felt sad?”, (11) felt you could not get going?”, and (12) felt bothered by things that don’t usually bother you?” Parents could respond with “never” (1), “some of the time” (2), “a moderate amount of the time” (3), or “most of the time” (4). Parents that refused to answer, responded “don’t know” or had responses that were not ascertained were coded as missing, while those who responded “not applicable” were recoded as “never.” The average of the twelve items was used to create the scale, with higher scores reflecting a higher number of depressive symptoms occurring more frequently.

Child Outcomes. A range of child outcomes were used to understand how family risk profiles impact later academic and behavioral development in children. Outcomes identified in the spring of 3rd grade included: reading achievement,

externalizing behaviors, and internalizing behaviors. All outcome measures were taken directly from the original database and not altered in any way, with the exception of recoding those who had responses of -9 ("Not ascertained") as missing. Specifics of each outcome measure are described below. Means, ranges and standard deviations of each risk factor scale for each racial group can be found in Table 2.

Reading achievement. Reading achievement reflected the child's T-score on a direct assessment of reading skills. Pools of test items were developed by elementary education specialists and reviewed by curriculum specialists to ensure content was consistent based on third grade reading curriculum. Items were tested in spring 2000 and validated using concurrent results of the Woodcock-McGrew-Werder Mini-Battery of Achievement (MBA; Woodcock, McGrew & Werder, 1994). The final assessment measured four reading elements: (1) phonemic awareness, (2) single word decoding, (3) vocabulary, and (4) passage comprehension (Westat, 2000).

During administration, each child received a short routing test, which determined the selection and administration of appropriate items based on their skill level. Reading passages and questions were presented within a student booklet and the child was allowed to go back to the story when answering questions. Questions were read by the examiner, while the child was expected to read the response options and choose the correct response (Westat, 2000). Results were reported as T scores, with higher scores indicating higher reading proficiency in comparison to peers.

Externalizing behavior. The Externalizing Problem Behaviors scale measured the frequency of acting out behaviors as rated by the child's classroom teacher. Teachers

completed a Teacher Social Rating Scale for each child in the study, which was adapted from the Social Skills Rating Scale (SSRS; Gresham & Elliott, 1990). The original questionnaire consisted of 34 items measuring both positive behaviors (approaches to learning, self-control, interpersonal skills, and peer relations), as well as externalizing and internalizing problem behaviors (Westat, 2000).

The Externalizing Problem Behaviors scale consisted of six items that rated the frequency of the following child behaviors: (1) arguing, (2) fighting, (3) getting angry, (4) acting impulsively, (5) disturbing ongoing activities and (6) talking during quiet classroom activities. These items were dispersed throughout the questionnaire to deter teachers from unreliable response patterns. All items were assessed using a Likert Scale ranging from 1-4, with 1 being "never" and 4 being "very often". Items were averaged to produce a scale score, with higher scores reflecting higher levels of externalizing behaviors in the classroom.

Internalizing behavior. The Internalizing Problem Behaviors scale measured the frequency of sad, lonely, or anxious emotions endorsed the by the child. Children completed a Self-Description Questionnaire, which was adapted from the Self-Description Questionnaire I developed by Marsh (1988). The adapted version consisted of 42 items measuring perceptions, thoughts and feelings of the child's social relationships (peer relations scale), problem behaviors, (externalizing and internalizing scales) and academic competencies (reading, math, and school scales). Items reflecting problem behaviors were developed specifically for the ECLS-K study. The questionnaire was completed by the child with an individual examiner. The examiner read the

questions to all children and children marked their response in an answer booklet (Westat, 2000).

The Internalizing Problem Behaviors scale consisted of eight items that rated the frequency of the following child behaviors and emotions: (1) feeling sad, (2) feeling lonely, (3) feeling ashamed of mistakes, (4) feeling frustrated, and (5) worrying about school and friendships. All items were assessed using a Likert Scale ranging from 1-4, with children identifying statements or behaviors as "not at all true" (1), "a little bit true" (2), "mostly true" (3), or "very true" (4). Items were averaged to produce a scale score, with higher scores reflecting higher levels of child-reported internalizing behaviors.

Table 2: Descriptive statistics of risk factor and outcome scales for each racial group

Scale	**Caucasian**	**African-American**	**Latino**
Risk factor scales			
Parental involvement in education	*M*= 3.42 SD= 1.51 Range = 0-7	*M*= 2.60 SD= 1.69 Range = 0-7	*M*= 2.88 SD= 1.57 Range = 0-7
Harsh discipline	*M*= 0.27 SD= 0.45 Range = 0-1	*M*= 0.50 SD= 0.50 Range = 0-1	*M*= 0.21 SD= 0.41 Range = 0-1
Value of school readiness	*M*= 4.00 SD= 0.47 Range = 2.5-5	*M*= 4.05 SD= 0.38 Range = 2.67-5	*M*= 4.01 SD= 0.38 Range = 1.83-5
Educational aspirations	*M*= 3.51 SD= 1.18 Range = 1-6	*M*= 3.82 SD= 1.28 Range = 1-6	*M*= 4.27 SD= 1.33 Range = 1-6
Home environment	*M*= 2.87 SD= 0.52 Range = 1.14-4	*M*= 2.79 SD= 0.55 Range =1.14-4	*M*= 2.64 SD= 0.57 Range = 1-4
Parent depressive symptomotology	*M*= 1.54 SD= 0.51 Range = 1-4	*M*= 1.66 SD= 0.57 Range = 1-4	*M*= 1.46 SD= 0.51 Range = 1-4
Outcome scales			
Reading achievement	*M*= 49.11 SD= 9.12	*M*= 43.54 SD= 9.25	*M*= 44.23 SD= 9.38

	Range= 14.61-76.47	Range = 14.24-66.48	Range= 14.18-71.37
Externalizing behavior	*M*= 1.76 SD= 0.60 Range = 1-4	*M*= 2.03 SD= 0.74 Range = 1-4	*M*= 1.68 SD= 0.59 Range = 1-4
Internalizing behavior	*M*= 2.24 SD= 0.75 Range = 1-4	*M*= 2.61 SD= 0.73 Range = 1-4	*M*= 2.55 SD= 0.70 Range = 1-4

Analysis

Overview. Within the study, latent profile analysis (LPA) was used to define profiles of kindergarten students based on observed family risk factors. LPA uses continuous, observed variables of study participants to examine underlying latent constructs that can be used to define and distinguish profiles from one another. Unlike traditional variable-driven approaches, LPA is person-centered and allows for individuals to be grouped based on similar characteristics that are shared across group members, making each group distinct and differentiated from other profiles.

In the past, person-centered approaches utilized clustering methods to derive clusters representing an underlying latent structure of observed variables. However, traditional clustering methods are often subject to scrutiny, due to a variety of issues including results that cannot be generalized to the larger population, multiple solutions derived from the same data, and little statistical support to determine if clusters are a meaningful representation of the data (Henry, Tolan & Gorman-Smith, 2005). Latent profile analysis improves upon prior clustering methods by using fit indices that support identifying the optimal model; in addition, cases are assigned to profiles using probability statistics to determine the likelihood, as well as level of error, associated with particular

group membership (Walrath, Petras, Mandell, Stephens, Holden & Leaf, 2004). For the purpose of this study, all analyses were conducted using MPlus version 5.21 (Muthen & Muthen, 2007).

Analysis steps. The six family risk factors developed for use in the study were first used within the LPA to determine profiles or subclasses for students within the original kindergarten sample (n=14,938). Within the original analysis, a meaningful solution was not found due to the non-normal distribution of the discipline scale, leading to the transformation of this scale into a dichotomous coding (details of this transformed scale can be found above). Using this transformed scale, analysis proceeded with the full kindergarten sample.

MPlus software provides multiple statistics to determine overall model fit, making it imperative for researchers to examine fit statistics and determine which indicators are best for use within a particular study. For the purpose of this study, the Bayesian Information Criterion (BIC; Schwartz, 1978) and the entropy statistics were initially used to determine model fit. The BIC has been identified in previous literature as a reliable indicator for use within LPA studies (Nylund, Asparouhov & Muthen, 2007). Within the use of LPA, the BIC statistic is examined as each subsequent model is identified. The BIC statistic is expected to decrease as more profiles are identified; however, when the value of the BIC increases rather than decreases (e.g., increases going from 3-4 profiles), the previous model (e.g., 3 profiles) is likely to be a better representation of the data. Similarly, the Akaike Information Criterion (AIC; Akaike, 1987) and the sample size adjusted BIC (aBIC; Sclove, 1987) can also be used to determine model fit, as values that

are closest to zero indicate better fit. Entropy statistics are used as an indicator of how well cases fit within the current identified model; better model classification is more likely to be found when entropy statistics are close to 1. However, due to inconsistencies with entropy statistics, it is best used in combination with other more reliable indicators.

These model fit statistics calculated within MPlus were analyzed within the LPA with the full kindergarten sample, utilizing the family risk factors with the transformed harsh discipline scale. At this time, the AIC, BIC, and aBIC statistics continued to decrease with the addition of subsequent classes and the entropy statistic was inconclusive. Given these results, each solution (from 1-9 classes) was analyzed to determine the amount of impact or influence each family risk factor had within different classes among solutions. Each risk factor had some impact on the solutions that were found, with the exception of the value of school readiness scale, as its value was highly similar across classes and solutions; therefore, the decision was made to remove this risk factor from the analysis.

Analysis of the kindergarten sample proceeded; however, despite the removal of the value of school readiness scale, a meaningful solution was still not found, as the AIC, BIC and aBIC statistics continued to decrease with the addition of subsequent classes and the entropy statistic was again inconclusive. Therefore, it was hypothesized that an adequate solution was not being found due to the large, heterogeneous sample, as it is becomes increasingly difficult to define meaningful profiles as the sample size increases and the diversity of participant demographics grows. Therefore, to form a more homogenous group for further analysis, the original kindergarten sample was whittled

down to a low income sample, comprised of all kindergarten students whose family socioeconomic status was reported to be within the first or second quintile (lower 40% of the sample) during the kindergarten year (n=5,431).

This low income sample was then used within the LPA to determine the number of family profiles that best fit the data. Given the previous inconclusive results using the AIC, BIC, aBIC and entropy statistics, other fit statistics were introduced into the model. The Vuong-Lo-Mendell Rubin likelihood ratio test (Golden, 2000) and the Lo-Mendell Rubin likelihood ratio test of model fit (Lo, Mendell & Rubin, 2001) were used in addition to the other fit statistics. These tests compare the estimated model with the previous model of one less class to determine if the estimated model is less or more preferable, with a lower p-value indicating that the current model is preferred over the previous model with one less class.

LPA analysis for the low income sample led to a four class solution. Although the AIC, BIC and aBIC statistics continued to decrease within subsequent models, the entropy statistic indicated the four class solution to be the best fit for the cases. In addition, the LMRT and VLMRT statistics yielded significant differences among the four and five class solution. This indicated that when comparing these two solutions, the addition of a fifth class within the model did not add any significant information; therefore, the four class solution was sufficient.

Covariates were then added into the four class solution. Given previous analysis of missing data, family SES and child race were intended for use as covariates; however, given that the sample was reduced to a low income population, only child race was

inserted into the model as a covariate. This analysis was done with the use of model constraints. As Muthen and Muthen (2007) suggest, fixing specific parameters helps researchers determine if and how certain variables may impact the model; therefore, model values were constrained to determine the effects of race on the chosen model.

Despite this constraint, the covariate of race changed the model significantly, indicating that race had a larger impact on the overall model than previously suspected and therefore, its use as a covariate was insufficient, as the variable of race had more of an influence on the results. Therefore, the low income sample was broken down into smaller, homogenous subsamples based on race, deriving three racial groups for further analysis (Caucasian= 2,154; African-American=1,136; Latino=1,531). These groups were analyzed separately using LPA to determine the best solution and number of profiles for each distinct racial group. Because the variables of family income and race were used to form subsamples for analysis, their use as covariates within the analysis was no longer applicable. Results for this final analysis can be found in Chapter 4.

Once profiles were derived for each racial group using LPA, the MPlus Auxiliary function (Muthen & Muthen, 2007) was used to analyze third grade outcomes. The auxiliary function tests the equality of means across latent classes using posterior probability-based multiple imputation. Within the analysis, the auxiliary function was used to compare the equality of means for reading achievement, externalizing behavior and internalizing behavior across profiles within each racial group. Cases that had missing outcome data were estimated using full information maximum likelihood estimation (see Little, 1995 for justification).

Hypotheses

Original hypotheses. Consistent with prior literature (Baumrind, 1967; 1971), it was hypothesized that four distinct profiles would emerge based on the identified family risk factors of kindergarten students, with the underlying latent variable of parenting style emerging. Table 2 displays a summarized view of hypotheses. One profile would consist of those families who are defined by the literature as authoritative. These families would exhibit few negative discipline practices and average levels of educational involvement and stimulating home environments. Parents within this group would hold average views of school readiness skills and have realistic educational expectations for their children. Parent mental health would be strongly positive, resulting in children with average levels of reading achievement, externalizing behavior, and internalizing behavior. It is expected that this profile would represent the largest subgroup of children.

A second profile would emerge of those traditionally viewed as authoritarian parents, marked by very high involvement in child education and a stimulating home environment. In addition, these parents would hold high expectations for school readiness, as well as high educational expectations for their child. Although parent well-being would fall in the average range, this family is marked by mostly negative discipline practices. It is expected that children raised in these types of families would have high levels of reading achievement and low levels of externalizing behavior; however, their levels of internalizing behavior would be high due to stress and anxiety from highly punitive parents.

In contrast to authoritarian parents are those who are permissive. This profile would consist of families who have poor involvement in school and low levels of stimulation in the home environment. Parent well-being, views of school readiness and educational expectations would be average, as these parents want their child to do well; in addition, their discipline methods would be mostly positive, as they are expected to be lax with their discipline and expectations and shower their children with love and positive reinforcement. Children raised in these families would have high levels of externalizing behavior, due to poor limits, and poor reading achievement. Few concerns would be found in the area of internalizing behavior.

Finally, it is expected that a fourth and final profile would emerge consisting of non-involved families whom would display the highest level of risk factors, as well as the worst child outcomes. These families would be marked by poor educational involvement, parent well-being and low stimulation in the home. Their expectations for school readiness and educational aspirations would also be low. In terms of discipline, their methods were expected to be predominantly negative. Children of these families would exhibit the poorest outcomes, as they would have low levels of reading achievement and high levels of externalizing and internalizing behaviors.

Table 3: Original hypotheses

	Profile #1 Authoritative	*Profile #2 Authoritarian*	*Profile #3 Permissive*	*Profile#4 Non-involved*
Risk factors				
Parent involvement in school	Average	High	Poor	Poor
Discipline	Positive	Negative	Positive	Negative
School readiness	Average	High	Average	Low
Educational expectations	Average	High	Average	Low
Home environment	Average	High	Poor	Poor
Parent well-being	High	Average	Average	Poor
Outcomes				
Reading	Average	High	Low	Low
Externalizing Behavior	Average	Low	High	High
Internalizing Behavior	Average	High	Low	High

Revised hypotheses. Given the change in analyses and the focus on distinct racial groups, hypotheses were revised accordingly given the nature of parenting differences and characteristics across racial groups that have been previously discussed in the empirical literature. Within the Caucasian subsample, it was hypothesized that four profiles would emerge and the characteristics of these profiles would be similar to those previously described above (authoritative, authoritarian, permissive and non-involved), given that previous research on parenting styles (Baumrind, 1967; 1971) utilized large numbers of Caucasian participants.

Within the African-American sample, it was hypothesized that three profiles would emerge: those parents who are authoritarian, permissive and non-involved, with the absence of an authoritative group. Given previous literature on parenting

characteristics within African-American families that highlights the use of more punitive practices (Roche, Ensminger & Cherlin, 2007), it was assumed that the authoritarian group would be the largest profile and these children would have the best outcomes academically and behaviorally. However, when compared to other racial groups, African-American students were likely to have lower levels of reading achievement and higher levels of externalizing behavior across all profiles.

Finally, within the Latino sample, it was hypothesized that four profiles would emerge with characteristics similar to the Caucasian sample; however, given the empirical literature that exists regarding the effects of acculturation level, primary language, and immigration status on parenting style (Hill, Bush & Roosa, 2003), these profiles may prove to be less definitive, with fewer extremes (either positive or negative) within and across profiles, as various risk factors may not align perfectly within the identified parenting styles. In addition, given the value and respect for teachers and education within the Latino culture, it is expected that these families will have higher educational aspirations for their children when compared to other racial groups; however, their level of parental involvement in the educational setting will be lower, given their belief about the distinction between home and school (Tinkler, 2002).

CHAPTER 4: RESULTS

Overview

Results from the study are presented in this chapter. Latent profile analysis (LPA) using Mplus version 5.21 (Muthen & Muthen, 2007) was conducted within each racial/ethnic group separately (Caucasian, African-American and Latino) to determine the optimal profiles of kindergarten students based on five observed family risk factors: parental involvement in education, harsh discipline, educational aspirations, home environment and parent depressive symptomotology. To determine model fit for the various number of profiles within each racial group, a variety of statistics commonly cited within this methodology were used. First, models were compared using the Bayesian Information Criterion (BIC; Schwartz, 1978), the Akaike Information Criterion (AIC; Akaike, 1987) and the sample size adjusted Bayesian Information Criterion (aBIC; Sclove, 1987). These statistics are expected to decrease in value as the tested model becomes a better fit of the data. Accuracy of classification was determined by examining the entropy measure (Ramaswamy**,** DeSarbo, Reibstein, &. Robinson, 1993), as better model classification is more likely to be found when entropy statistics are closer to 1.0, with values higher than 0.80 indicating acceptable classification (Muthen, 2004). In addition, the Vuong-Lo-Mendell Rubin likelihood ratio test (Golden, 2000) and the Lo-Mendell Rubin likelihood ratio test of model fit (Lo, Mendell & Rubin, 2001) were used in combination with the other fit statistics. These tests compare the estimated model with the previous model of one less class to determine if the estimated model is less or more

preferable, with a lower p-value indicating that the current model is preferred. Finally, models with varying numbers of profiles within each racial group were evaluated and compared with one another, with proper attention given to a number of factors, including utility, distinctiveness and interpretability of the results. Results of the LPA, including model fit statistics for each solution, are summarized in Tables 4-6.

Characteristics of each class within the final solutions are presented in Figures 2-4. Within these figures, numerical values represent the difference of each observed family risk factor value from the group mean; higher numbers represent higher values and lower numbers represent lower values when compared to the mean. Class labels were given based on the compilation of risk factors associated with each class. Descriptions of each class within each solution are discussed in detail below.

Once the best solution was identified for each racial/ethnic group, profiles were examined to determine if they could be differentiated from one another using third grade outcomes. This step is important, as it provides evidence that the profiles represent meaningful subsamples of the population as opposed to data patterns. To accomplish this, the Mplus Auxiliary function (Muthen & Muthen, 2007) was used. This method derives profile membership based on the observed risk factor scores and uses the posterior probabilities to compute means for each external variable (reading achievement, externalizing behavior and internalizing behavior outcomes in third grade). Differences between these mean scores are then tested for statistical significance. Although various methods are available within Mplus to determine profile validity using external variables, this method is advantageous because membership within profiles is fixed, as opposed to

other methods where class membership is based on probability or modal assignment, thus introducing large levels of error variance within the model. Results of this analysis are presented in Tables 7-9 and discussed below.

To accommodate for missing data, Mplus software uses full information maximum likelihood estimates with the assumption that the data is missing at random (Little, 1995), a common approach employed within this analysis method (Schafer & Graham, 2002) and used within the current study as well. Overall, 93% of the participants (94% Caucasian, 90% African-American, 93% Latino) had all data for all variables used for the profile analysis, 79% (77% Caucasian, 74% African-American, 84% Latino) had third grade reading data, 62% (69% Caucasian, 55% African-American, 57% Latino) had third grade externalizing behavior data, and 79% (77% Caucasian, 74% African-American, 84% Latino) had third grade internalizing behavior data. The minimum covariance coverage recommended for reliable model convergence is 0.10 (Muthen & Muthen, 2004). In this study, coverage ranged from 0.93-0.99 for the Caucasian sample, 0.89-0.98 for the African-American sample and 0.92-0.99 for the Latino sample, all well exceeding the recommended coverage.

Results

Descriptive statistics for each variable by racial group are provided in Table 2.

Question 1: What number and types of family profiles will emerge from each subsample?

Caucasian sample. LPA analyses for the Caucasian sample (n=2154) led to a five class solution. The AIC, BIC and aBIC statistics indicated improvement in model fit up

to five classes; similar results were seen with the LMRT and VLMRT tests (see Table 4). Further, the entropy statistic was higher for the five class solution when compared with the four class solution. The five class solution added a class with families of parent with high aspirations, but also high levels of depression, adding a distinct group not accounted for in the four class solution. Although a six class solution was attempted, a model could not be defined. However, the five class solution was chosen as the most confident solution, given that classes remained stable across models, a unique profile was added that had distinct characteristics and the entropy statistic showed improvement. The five classes included:

1. Families with low educational involvement and low educational aspirations (30%)
2. Families with high educational aspirations for their children (12%)
3. Depressed parents with high educational aspirations for their children (1%)
4. High risk families, marked by low educational aspirations, low educational involvement, high depressive symptomotology and negative discipline practices (5%), and
5. Families with few risk factors (52%).

Figure 2 details the characteristics of the five identified latent profiles of low income, Caucasian kindergarten students.

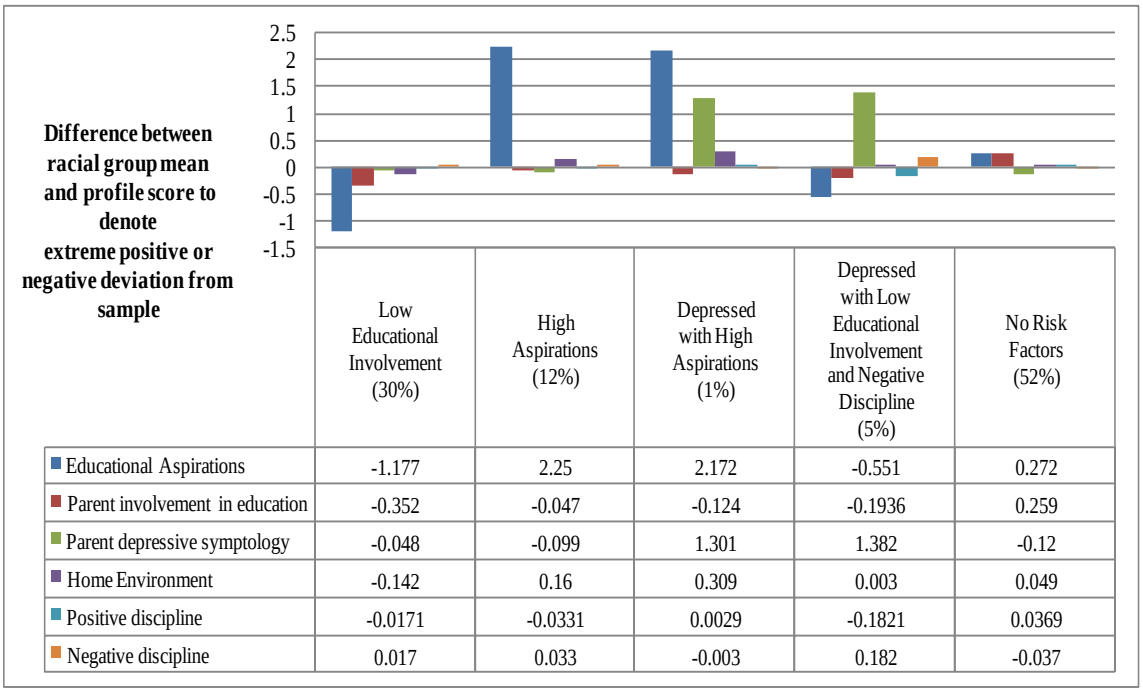
Table 4: Model fit indices for 2-6 class solutions of family risk factors

for low income, Caucasian kindergarten students

	AIC	BIC	Adj. BIC	LMRT P value	VLMRT P value	Entropy
2 class solution	22445.741	22530.867	22483.210	0.0000	0.0000	0.911
3 class solution	22288.553	22407.730	22341.011	0.0000	0.0000	0.705
4 class solution	22103.769	22256.996	22171.214	0.0000	0.0000	0.716
5 class solution	**21904.083**	**22091.361**	**21986.516**	**0.0133**	**0.0123**	**0.838**
6 class solution	AN OPTIMAL SOLUTION WAS NOT IDENTIFIED AFTER 4,000 STARTS					

Bold indicates chosen solution.

Figure 2: Characteristics and prevalence of family risk factors within each class of low income, Caucasian kindergarten students



	Low Educational Involvement (30%)	High Aspirations (12%)	Depressed with High Aspirations (1%)	Depressed with Low Educational Involvement and Negative Discipline (5%)	No Risk Factors (52%)
Educational Aspirations	-1.177	2.25	2.172	-0.551	0.272
Parent involvement in education	-0.352	-0.047	-0.124	-0.1936	0.259
Parent depressive symptology	-0.048	-0.099	1.301	1.382	-0.12
Home Environment	-0.142	0.16	0.309	0.003	0.049
Positive discipline	-0.0171	-0.0331	0.0029	-0.1821	0.0369
Negative discipline	0.017	0.033	-0.003	0.182	-0.037

African-American sample. LPA analyses for the African-American sample (n=1136) led to a three class solution. The AIC, BIC and aBIC statistics indicated improvement in model fit up to six classes, while the entropy statistic peaked at a two class solution and decreased within further models (see Table 5). However, the LMRT and VLMRT yielded significant differences among the three and four class solution, indicating that the addition of a fourth class did not yield any significant information. Therefore, the three class solution was chosen for further analyses. The three classes included:

1. Families with low educational involvement (60%)

2. Families with depressive symptoms and negative discipline practices (10%), and
3. Families with high levels of educational involvement (30%).

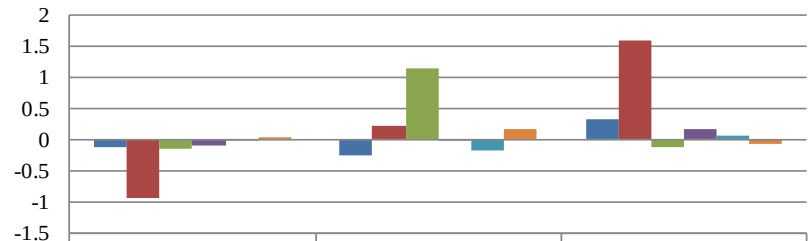
Figure 3 details the characteristics of the three identified latent profiles of low income, African-American kindergarten students.

Table 5: Model fit indices for 2-6 class solutions of family risk factors for low income, African-American kindergarten students

	AIC	BIC	Adj. BIC	LMRT P value	VLMRT P value	Entropy
2 class solution	12674.431	12749.960	12702.315	0.0000	0.0000	0.828
3 class solution	**12609.693**	**12715.433**	**12648.731**	**0.0001**	**0.0001**	**0.643**
4 class solution	12580.336	12716.289	12630.529	0.4634	0.4574	0.696
5 class solution	12544.453	12710.617	12605.800	0.0358	0.0335	0.662
6 class solution	12529.864	12726.239	12602.364	0.1028	0.0969	0.599

Bold indicates chosen solution.

Figure 3: Characteristics and prevalence of family risk factors within each class of low income, African-American kindergarten students



	Low Educational Involvement (60%)	Depressed with Negative Discipline (10%)	High Educational Involvement (30%)
Educational Aspirations	-0.135	-0.257	0.324
Parent involvement in education	-0.957	0.232	1.597
Parent depressive symptology	-0.162	1.157	-0.121
Home Environment	-0.092	-0.021	0.17
Positive discipline	-0.003	-0.165	0.064
Negative discipline	0.003	0.165	-0.064

Latino sample. LPA analyses for the Latino sample (n=1531) led to a five class solution. The AIC, BIC and aBIC statistics indicated improvement in model fit up to six classes (see Table 6). The entropy statistic increased consistently from the three to five class solutions and then dropped slightly within the six class model. In addition, the LMRT and VLMRT tests yielded significant differences among the five and six class solution. Therefore, the five class solution was chosen for further analyses. The five classes included:

1. Families with low levels of educational involvement, educational aspirations,
   depressive symptomotology and stimulating home environments (28%)
2. Parents with moderate depressive symptoms (5%)
3. Families with relatively few risk factors (27%)

4. Parents with high levels of depression and low involvement (1%), and
5. Families with higher educational involvement and home stimulation (39%).

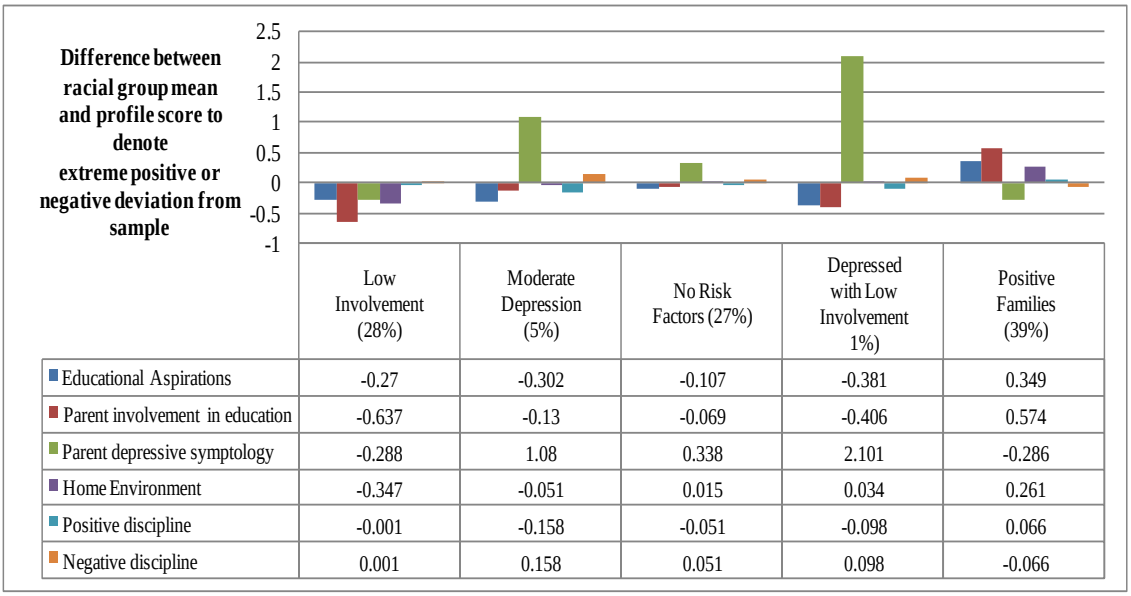
Figure 4 details the characteristics of the five identified latent profiles of low income, Latino kindergarten students.

Table 6: Model fit indices for 2-6 class solutions of family risk factors for low income, Latino kindergarten students

	AIC	BIC	Adj. BIC	LMRT P value	VLMRT P value	Entropy
2 class solution	16452.717	16532.722	16485.071	0.0000	0.0000	0.916
3 class solution	16439.732	16461.739	16395.027	0.0011	0.0013	0..570
4 class solution	16192.769	16336.996	16251.214	0.0004	0.0005	0.625
5 class solution	**16047.146**	**16223.157**	**16118.325**	**0.0001**	**0.0001**	**0.690**
6 class solution	16001.748	16209.761	16085.868	0.3065	0.3154	0.685

Bold indicates chosen solution.

Figure 4: Characteristics and prevalence of family risk factors within each class of low income, Latino kindergarten students



	Low Involvement (28%)	Moderate Depression (5%)	No Risk Factors (27%)	Depressed with Low Involvement 1%)	Positive Families (39%)
Educational Aspirations	-0.27	-0.302	-0.107	-0.381	0.349
Parent involvement in education	-0.637	-0.13	-0.069	-0.406	0.574
Parent depressive symptology	-0.288	1.08	0.338	2.101	-0.286
Home Environment	-0.347	-0.051	0.015	0.034	0.261
Positive discipline	-0.001	-0.158	-0.051	-0.098	0.066
Negative discipline	0.001	0.158	0.051	0.098	-0.066

Both similarities and distinctions can be found when comparing the various profiles that were identified within the analysis. Similar profiles involving mental health concerns, low educational involvement and high educational involvement can be found across all racial and ethnic profiles. However, the African-American sample revealed fewer classes with the absence of a relatively normal, or a "No Risk Factors" class, distinctly different from the Caucasian and Hispanic sample. In addition, the discipline risk factor did not appear to cause any distinct differences among classes within the Caucasian and Hispanic samples; however, within the African-American sample, a profile was identified that reported a higher use of negative discipline practices.

Question 2: Are there significant differences among the kindergarten family profiles when examining negative third grade outcomes, including decreased reading

performance, increased externalizing behaviors, and increased internalizing behaviors?

Caucasian sample. Table 7 summarizes outcome data for the Caucasian sample, specifically reading, externalizing behavior and internalizing behavior mean scores for each class, along with results of the equality tests of means used to compare differences among classes within each distinct outcome.

Third grade reading. Within the Caucasian sample, average reading T scores ranged from 43.71 (Class 4: Depressed with Low Educational Involvement and Negative Discipline) to 50.51 (Class 3: Depressed with High Aspirations). When comparing mean reading scores across classes, the overall test was significant ($p<.001$), indicating significant mean differences among groups in relation to reading performance. Analysis of differences revealed that students whose parents have high educational aspirations for them in kindergarten (Class 2) have significantly higher reading performance in third grade than students whose parents had low educational involvement in kindergarten (Class 1) and students who were had depressed parents who exhibited low educational involvement and used negative discipline practices(Class 4). However, these same students have significantly lower reading performance when compared to students whose parents were significantly depressed but held high educational aspirations for their children (Class 3) and those with no identifiable risk factors in kindergarten (Class 5). In addition, those children at the highest risk (Class 4) had significantly lower reading performance in third grade when compared to those with no risk factors (Class 5).

Third grade externalizing behavior. Externalizing behavior ratings within the

Caucasian sample ranged from 1.46 (Class 2: High Aspirations) to 1.88 (Class 3: Depressed with High Aspirations). When comparing mean scores across classes, the overall test was not significant, indicating no significant differences among groups in relation to externalizing behavior levels.

Third grade internalizing behavior. Within the Caucasian sample, internalizing behavior rating scores ranged from 2.19 (Class 2: High Aspirations) to 2.38 (Class 4: Depressed with Low Educational Involvement and Negative Discipline). Although the overall test was not significant, analysis of mean score differences among classes indicated that students with no identifiable risk factors in kindergarten (Class 5) had significantly higher internalizing behaviors than students whose families held high aspirations for them (Class 2), but significantly lower internalizing behaviors when compared to students at the highest level of risk (Class 4).

African-American sample. Table 8 summarizes outcome data for the African-American sample, specifically reading, externalizing behavior and internalizing behavior mean scores for each class, along with results of the equality tests of means used to compare differences among classes within each distinct outcome.

Third grade reading. Within the African-American sample, average reading T scores ranged from 41.37 (Class 2: Depressed with Negative Discipline) to 43.23 (Class 3: High Educational Involvement). When comparing mean scores across classes, the overall test was not significant, indicating no significant differences among groups in relation to reading performance.

Third grade externalizing behavior. Externalizing behavior ratings within the

African-American sample ranged from 1.86 (Class 3: High Educational Involvement) to 2.22 (Class 2: Depressed with Negative Discipline). When comparing mean externalizing behavior scores across classes, the overall test was significant ($p<.05$), indicating significant mean differences among groups in relation to externalizing behavior. Analysis of differences revealed that students whose parents had depressive concerns and predominantly negative discipline practices in kindergarten (Class 2) had significantly higher levels of externalizing behaviors than students whose parents had low educational involvement (Class 1) or high educational involvement (Class 3) in kindergarten.

Third grade internalizing behavior. Within the African-American sample, internalizing behavior ratings ranged from 2.51 (Class 3: High Educational Involvement) to 2.69 (Class 2: Depressed with Negative Discipline). When comparing mean scores across classes, the overall test was not significant, indicating no significant differences among groups in relation to internalizing behaviors.

Latino sample. Table 9 summarizes outcome data for the Latino sample, specifically reading, externalizing behavior and internalizing behavior mean scores for each class, along with results of the equality tests of means used to compare differences among classes within each distinct outcome.

Third grade reading. Within the Latino sample, average reading T scores ranged from 40.73 (Class 2: Moderate Depression) to 44.61 (Class 5: Positive Families). Although the overall test was not significant, analysis of mean scores differences among classes indicated that students with no identifiable risk factors in kindergarten (Class 3)

had significantly higher reading scores than students whose parents had significant depression levels and low involvement (Class 4).

Third grade externalizing behavior. Externalizing behavior rating scores within the Latino sample ranged from 1.51 (Class 1: Low Involvement) to 1.79 (Class 4: Depressed with Low Involvement). When comparing mean scores across classes, the overall test was not significant, indicating no significant differences among groups in relation to externalizing behaviors.

Third grade internalizing behavior. Within the Latino sample, internalizing behavior rating scores ranged from 2.43 (Class 1: Low Involvement) to 2.60 (Class 4: Depressed with Low Involvement). The overall test comparing mean scores across classes was not significant, indicating no significant differences among groups when analyzing internalizing behavior levels.

Table 7: Equality Tests of Means across Caucasian Profiles using Posterior Probability Based Multiple Imputations

	Class 1: Low Educational Involvement (n=652)	Class 2: High Aspirations (n=255)	Class 3: Depressed with High Aspirations (n=24)	Class 4: Depressed with Low Educational Involvement and Negative Discipline (n=101)	Class 5: No Risk Factors (n=1122)	Overall test of significance	Significant class comparisons
Reading Achievement	*M*= 46.35	*M* = 49.64	*M* = 50.51	*M* = 43.71	*M* = 50.01	26.40***	Class 2 vs. 4* Class 4 vs. 5*** Class 1 vs. 2*** Class 2 vs. 3** Class 2 vs. 5***

Externalizing Behavior	*M* = 1.74	*M* = 1.46	*M* = 1.88	*M* = 1.75	*M* = 1.67	5.09	None
Internalizing Behavior	*M* = 2.31	*M* = 2.19	*M* = 2.36	*M* = 2.38	*M* = 2.20	7.865	Class 2 vs. 5** Class 4 vs. 5*

Chi-square *p*-values: * p <.05 ** p <.01 *** p <.001

Table 8: Equality Tests of Means across African-American Profiles using Posterior Probability Based Multiple Imputations

	Class 1: Low Educational Involvement (n=677)	Class 2: Depressed with Negative Discipline (n=115)	Class 3: High Educational Involvement (n=344)	Overall test of significance	Significant class comparisons
Reading Achievement	*M* = 41.68	*M* = 41.37	*M* = 43.23	1.98	None
Externalizing Behavior	*M* = 1.91	*M* = 2.22	*M* = 1.86	8.26*	Class 1 vs. 2* Class 2 vs. 3*
Internalizing Behavior	*M* = 2.61	*M* = 2.69	*M* = 2.51	2.87	None

Chi-square *p*-values: * p <.05 ** p <.01 *** p <.001

Table 9: Equality Tests of Means across Latino Profiles using Posterior Probability Based Multiple Imputations

	Class 1: Low Involvement (n=432)	Class 2: Moderate Depression (n=80)	Class 3: No Risk Factors (n=406)	Class 4: Depressed with Low Involvement (n=21)	Class 5: Positive Families (n=592)	Overall test of significance	Significant class comparisons
Reading Achievement	*M* = 43.23	*M* = 40.73	*M* = 43.24	*M* = 42.21	*M* = 44.61	5.373	Class 3 vs. 4*
Externalizing Behavior	*M* = 1.51	*M* = 1.61	*M* = 1.55	*M* = 1.79	*M* = 1.52	1.91	None
Internalizing Behavior	*M* = 2.43	*M* = 2.55	*M* = 2.51	*M* = 2.60	*M* = 2.45	1.793	None

Chi-square *p*-values: * p <.05 ** p <.01 *** p <.001

CHAPTER 5: DISCUSSION

Overview

The purpose of this study was to extend the empirical literature regarding early family risk factors to understand how cumulative risk manifests within profiles of low-income, entering kindergarten students and is associated with later academic and behavioral outcomes. Specifically, this study investigated the number and types of family profiles that emerged from each low-income, racial/ethnic subsample and determined whether or not significant differences were found among these kindergarten family profiles when examining negative third grade outcomes, including decreased reading performance, increased externalizing behaviors and increased internalizing behaviors.

Within previous literature, an emphasis has been placed on single risk factors that children or families may exhibit, rather than examining risk within a cumulative framework. In addition, some researchers, particularly those investigating kindergarten screening and school readiness, tend to focus on child domains with little attention given to the family context, despite this environment being the largest socialization agent in the life of a child prior to school entry (Shaffer, 2002). This study extends the empirical knowledge by examining malleable family risk factors that occur within the lives of children at the transition to kindergarten utilizing a cumulative-risk approach, as well as examining the association of profile membership with later academic and behavioral outcomes. It builds upon previous evidence indicating that children who exhibit early problems beyond school entry are at increased risk of negative life outcomes (Patterson et

al., 1989), malleable family risk factors should be given adequate attention when conceptualizing early risk patterns (see Chamberlain et al., 1997 and Bradley & Caldwell, 1982 for examples), and the best outcomes are seen by utilizing a combined early intervention, family systems, developmental approach (Kellam et al., 1975; Minuchin, 1985; Weissberg et al, 2003). Utilizing this knowledge, schools must shape their kindergarten screening practices by increasing knowledge and awareness of how to effectively identify at-risk students in need of interventions and lending increased support to families in the school setting through the use of evidence-based interventions (Jones & Chronis-Tuscano, 2008).

In general, this study concluded that racial background and family income level were important variables in defining various risk profiles. Although an original analysis was planned that attempted to control for these variables, these variables could not be simply used as covariates, indicating their importance in the examination of early family risk. When comparing family profiles across each identified racial or ethnic group (Caucasian, African-American and Latino), both similarities and distinctions were recognized, most notably with similar profiles involving mental health concerns, low educational involvement and high educational involvement spanning all racial and ethnic groups. An African-American profile was distinct in that it signified negative discipline practices that were not found within other profiles. In terms of third grade outcomes, few significant differences were found when comparing profiles across each racial or ethnic group. However, the most negative outcomes were found for those children who fell into kindergarten profiles where numerous risk factors were identified at more severe levels.

Outcomes for this study are organized and discussed by research question below.

Limitations of the study, implications for practice and recommendations for future research are then presented.

Research Question 1: What number and types of low income family profiles will emerge from each racial/ethnic subsample?

Caucasian sample. When determining results within each racial/ethnic group independently, the study found that the best solution for the Caucasian sample consisted of five profiles, reflecting low educational involvement, high educational aspirations, depressed parents with high educational aspirations, high risk families (marked by low educational aspirations, high depressive symptomotology and mixed discipline practices) and those with few risk factors. These results were somewhat consistent with hypotheses regarding results that reflect the parenting styles identified by Baumrind (1967, 1971). However, the addition of a profile that included depressed parents who, despite their symptomotology, still held high educational aspirations for their children was unexpected, given that literature regarding parental mental health status describes these parents as often apathetic due to their mental health symptoms characterized by little involvement and communication with their children (Crook, Raskin & Eliot, 1981). It is hypothesized that this family profile emerged due to the cognitive distortions that often occur within depressed, stressed individuals (Sachs, Pietrukowicz & Hall, 2006); it is possible that these parents hold high expectations of their children that are unrealistic and unattainable, which may further contribute to their depressed status when their children do not meet these demanding expectations.

When comparing the observed risk factors of the Caucasian sample with the other racial and ethnic samples in the study, the Caucasian subgroup had the highest levels of

mean educational involvement and cognitive stimulation in the home. Higher levels of involvement in education and in the home are consistent with prior literature, which states that the behaviors viewed as optimal involvement within the American educational system (e.g., attending PTA meetings, volunteering in the classroom, reading to children before bed) are found to be more common practices within the European-American culture (Desforges & Abouchaar, 2003).

African-American sample. The African-American subsample resulted in a final solution of three profiles, much fewer when compared with the Caucasian and Latino samples. These profiles consisted of low educational involvement, high educational involvement and depressed parents with harsh discipline practices. Compared with initial hypotheses, there was not a clear association among profiles when compared with prior parenting styles identified within the literature (see Baumrind, 1967; 1971 for discussion), as the largest group (60%) represented those parents with low educational involvement. This was in contrast to an authoritarian group that was expected to be the largest profile. This difference may have occurred given the nature of the low income sample that was addressed. Authoritarian African-American parents may represent more of a middle class phenomenon, as these families are characterized by high levels of demand, while still exhibiting high levels of warmth, leading to positive outcomes for their children (Bluestone & Tamis-LeMonda, 1999). Fordham and Ogbu (1986) discuss the institutional barriers and covert racism that may occur within the current culture of the educational system, which may contribute to low levels of educational involvement of the majority of low income, African-American parents.

Negative discipline practices within the African-American sample proved to be a large distinguishing factor among profiles. A minority group (10%) of African-American parents was found to exhibit harsh discipline practices and depressive symptomotology. Multiple variables, including the stressors of obtaining adequate employment and a meaningful wage (Haveman & Wolfe, 1994), and the historical use of punitive punishment within the African-American community dating back to slavery (Belgrave & Allison, 2009) may be contributing factors towards the use of negative discipline practices.

Across the entire African-American low income sample, negative discipline practices were found at a higher rate when compared with other racial and ethnic groups, as nearly 50% of the African-American sample endorsed the use of negative practices. This was expected, given the previous literature on parenting characteristics within African-American families (Roche, Ensminger & Cherlin, 2007). However, 66% of respondents within Class 2 reported the use of negative discipline practice, when compared to approximately 50% of respondents in the other profiles. Therefore, despite the common practice of negative discipline within the African-American culture, it appears that the over-reliance on negative discipline practices, along with a lower rate of positive practices, may be an added risk for some families. In addition, depressive symptoms among African-American parents, which were the highest when compared with other racial and ethnic groups within the study, may also contribute to the lack of motivation in providing optimal discipline in the home environment.

Latino sample. Similar to the Caucasian subsample, the best solution for the Latino subgroup consisted of five profiles. The largest profile consisted of those parents

with high levels of educational involvement and home stimulation, followed by families with at-risk levels of educational involvement, those with little risk, parents with at-risk depressive symptoms and those parents with high levels of depression. Consistent with hypotheses, the Latino solution consisted of many profiles which were characterized by at-risk factors, meaning that they were distinguished from other profiles by observed risk factors that were moderately, but not severely high. Hill, Bush and Roosa (2003) describe the difficulties in understanding Latino family characteristics, including parenting practices, mental health risk and the home environment, and attribute this difficulty to the wide variation in the Latino population due to increased immigration and acculturation and language status. The diversity of this population and the homogenous grouping of the sample within the study may have contributed to the lack of clear differences among profiles.

A profile consisting of 39% of the subsample reflected high levels of educational involvement. This finding was unexpected, given the literature on the distinction between home and school in the Latino culture. Tinkler (2002) describes this distinction by describing how few Latino families collaborate actively with the school, given that they often feel that it is the teacher's responsibility to make sure children behave in the school environment and learn properly, while it is the parent's job to make sure that children behave and learn at home.

When comparing Latino participants' level of risk factors with those of other racial and ethnic groups, Latino parents had higher levels of educational aspirations when compared with other racial and ethnic groups. This is consistent with prior literature, indicating the cultural respect and value for teachers and education (Tinkler, 2002).

Levels of stimulating home environments and depression were found to be the lowest among any racial or ethnic group, which may be due to factors associated with acculturation and immigration. For example, Keegan-Eamon (2005) found the amount of cognitive stimulation in the home and subsequent child academic achievement to be influenced by poverty, parent English language skills and neighborhood quality, all of which are related to immigration and acculturation status.

In terms of low levels of reported depression, adult Latinos who hold traditional cultural often have a higher tolerance of coping with negative emotions, attribute their depressed symptoms to interpersonal problems and hold a holistic view of the mind and body. This is in direct contrast to the Western view of mental health symptoms, which includes a low tolerance for negative emotionality, seeking out assistance from professionals when needed, and understanding the role of biology within mental health. This incongruence among views of mental health, and more specifically depressive symptomotology, may have contributed to the low levels of reported depressive symptoms within the identified Latino sample (Tsai & Chentsova-Dutton, 2002).

Research Question 2: Are there significant differences among the kindergarten, low income family profiles when examining negative third grade outcomes, including decreased reading performance, increased externalizing behaviors, and increased internalizing behaviors?

Caucasian sample. When comparing third grade academic outcomes among the five Caucasian family profiles, the study determined that significant mean differences existed among classes based on the results of the equality tests of means used within Mplus. Specifically, students whose families held high educational aspirations for them

(Class 2) performed better on reading achievement tests than those students with parents who had low levels of educational involvement (Class 1) and those with the highest risk (Class 4). However, these same students whose families held high educational aspirations (Class 2) had significantly lower reading performance than those students with few additional identified risk factors (Class 5) and students with depressed parents who held high educational aspirations for them (Class 3). The highest risk profile, designated by those parents who were depressed, had low educational involvement and negative discipline practices (Class 4) had the worst reading performance and these scores were significantly lower when compared to students with no additional risk factors (Class 5).

The majority of these academic results within the Caucasian sample were consistent with original hypotheses. For example, research indicates that those students with a number of risk factors, as well as those who come from homes where parents are less involved in education are much more likely to have academic difficulties (see Walker & Hoover-Dempsey, 2006). In addition, those students whose parents value education and hold high aspirations for their children are likely to internalize these values and succeed academically (Hoover-Dempsey & Sandler, 1995). However, it was somewhat unexpected that children whose parents had high aspirations for them educationally but also showed symptoms of depression did significantly better than those children coming from families with the same aspirations but the absence of depression, given that the stress of growing up in a household where mental health concerns are present is likely to manifest in children behaviorally (Moss, Cyr, & Dubois-Comtois, 2004). It is possible that these parents may hold high expectations of their children that

are often unrealistic (Sachs, Pietrukowicz & Hall, 2006), but given the cognitive development of children during middle childhood (Shaffer, 2002), they interpret the expectation as rational and work harder to succeed in the educational environment.

When analyzing differences in behavioral outcomes, no significant findings were found among classes in terms of third grade externalizing behaviors. Analysis of internalizing behavior outcomes found that students identified as the highest risk (Class 4) had significantly higher levels of internalizing behaviors when compared to those with no identifiable risk factors in kindergarten (Class 5), which was accurately predicted given that students who come from families who exhibit multiple risk factors occurring simultaneous are likely to have more significant emotional concerns (Sameroff, Bartko, Baldwin, Baldwin & Seifer, 1998). These same students with no additional risk factors (Class 5), however, had significantly higher self-reported internalizing behaviors when compared to students whose families held high educational aspirations for them (Class 2).

These behavioral outcomes were highly inconsistent with hypotheses in several ways. First, it was expected that there would be significant differences among externalizing behavioral outcomes, given the large amount of literature that exists regarding the influence of the family environment in the development of externalizing behaviors (see Patterson et al., 1988 for an in-depth discussion). Second, it was expected that students whose parents held high educational aspirations may also display higher levels of internalizing behaviors, given the pressure to succeed academically; however, this finding was not evident within the current study.

When attempting to interpret why these results were found, it is possible that differences in externalizing behaviors were not identified among groups due to the fact

that the entire sample was at-risk, given their socioeconomic status. Literature has identified that risk factors associated with the development of externalizing behavior are also highly correlated with behaviors and values of low income families (Lee & Burkam, 2002); therefore, other risk factors measured within the study may not play a significant role independent of family income. In respect to internalizing behaviors, students whose parents with high educational aspirations may not display internalizing symptoms because their parents' expectations were matched with resources available to students to successfully meet these goals; it is often when these expectations become unrealistic and the environment is inconsistent with these expectations that negative child outcomes may occur (Zhan, 2006).

When comparing academic and behavioral outcomes within the Caucasian group with the other racial and ethnic samples, it should be noted that the Caucasian sample had the highest mean reading achievement score. The mean reading score of the Caucasian group was consistent with the overall population mean score of third grade students assessed in the original ECLS-K sample (Westat, 2000). In addition, the externalizing and internalizing behavior mean scores of the Caucasian group were also highly similar to the overall sample. This indicates that the risk factors of socioeconomic status and race may not play as large of a role in academic and behavioral outcomes in the Caucasian population in comparison with the role these demographic risk factors (e.g., socioeconomic status, race) may play within other minority groups. Instead, when analyzing risk factors within Caucasian samples, it may be best to examine other observed family risk factors, such as educational involvement, parent mental health, and

educational aspirations to determine which students and families may benefit from early intervention and prevention programming in the school environment.

African-American sample. When comparing third grade academic and behavioral outcomes among the three African-American family profiles, no significant differences were found among reading achievement scores. These results were inconsistent with the original hypotheses, as well as previous literature stating that children who come from families who use highly negative discipline practices, as well as those with low educational involvement, are likely to have difficulty academically (Steinberg et al., 1994; Walker & Hoover-Dempsey, 2006). However, given that the African-American subsample had the lowest mean reading achievement score among all the racial and ethnic groups analyzed within the study, it may be possible that these additional observed family risk factors do not distinguish groups from one another within a low income sample; instead, income level may be a significant factor to consider in determining which African-American students may be at later risk of academic failure.

When analyzing differences in behavioral outcomes, students whose parents had depressive symptoms and used predominantly negative discipline practices in kindergarten (Class 2) had significantly higher levels of externalizing behaviors in third grade when compared with students classified in the other African-American profiles (Classes 1 & 3). This finding is highly consistent with the literature citing the role of early discipline patterns and parental mental health in the trajectory of externalizing behavior concerns (McCarthy & McMahon, 2003; Patterson et al., 1988) and was highly expected within the current study. No significant differences were found among the African-American profiles in regards to internalizing behaviors; however, it should be

noted that the African-American subsample had the highest mean level of internalizing behaviors when compared to the other racial and ethnic groups used in the current study. This finding was also consistent with externalizing behaviors, as the mean scores were also the highest for the African-American sample. These elevated levels of behaviors may occur due to the differences in cultural expectations across the home and school environments, along with increased stress in the hone environment, both of which have been commonly cited in the literature as contributors toward behavior and emotional problems in African-American children (McCreary, Slavin & Berry, 1996; Murrell, 1999).

Latino sample. When comparing third grade academic outcomes among the five Latino family profiles, significant mean differences were found among two classes. Specifically, these results indicated that students with no additional identifiable family risk factors in kindergarten (Class 3) had significantly higher reading achievement scores when compared to students whose parents had depressive symptoms and low involvement (Class 4). This is consistent with previous literature that discusses the impaired functioning of children, both in the home and school settings, whose parents are suffering from mental health problems (Allen, Moore, Kuperminc & Bell, 1998; Carlson, 1998; Schneider, Atkinson & Tardif, 2001).

In respect to behavioral outcomes, no significant differences were identified among classes. This was somewhat surprising, given that three of the five profiles found within the Latino sample had at-risk levels of family risk factors, including mental health concerns and low educational involvement, which research shows are likely to impact behavioral functioning in children (Allen, Moore, Kuperminc & Bell, 1998; McCarthy &

McMahon, 2003). However, the fact that the majority of research on developmental psychopathology and behavioral outcomes has not focused on immigrant populations (Serafica & Vargas, 2006) suggests that these theories may not cross over to the changing Latino population as easily. In addition, given that the entire Latino sample was at-risk due to low levels of income, it is unknown if differences may have been found when comparing low-income populations with other more affluent Latino samples. Therefore, more information is needed regarding the risk factors associated with the development of maladaptive behavioral patterns in the Latino population.

When analyzing the Latino profiles as a whole, approximately 50% of the sample fell within "positive" profiles, or classes that had few risk factors along with positive characteristics within the home environment, which may contribute to the lack of significant outcome differences between groups. Another possibility as to why few significant differences were found among externalizing behaviors in the Latino profiles specifically may be due to the fact that the Latino subsample, in general, had the lowest mean externalizing behavior scores when compared with the other racial groups used within the current study. It is likely that this is due to the value of family cohesiveness and collectivism found within this culture, which emphasizes respect for parents and those adults in roles of authority (Tinkler, 2002). Because the externalizing behavior outcome measure was derived from teacher survey results, it is likely that Latino children may exhibit fewer behavioral difficulties in the classroom due to their cultural upbringing, despite the number or intensity of risk factors they face in the home environment.

Implications for practice

The current investigation offers several useful contributions for practice, particularly in increasing our knowledge and understanding of potential family risk factors, screening upon school entry, and developing interventions for at-risk students. First, the study highlights the importance of giving proper attention to demographic risk factors such as racial or ethnic background, as well as family income. Although much literature exists both supporting and negating the impact of race and income level on later outcomes (see Jencks & Phillips, 1998 for supporting arguments; see Entwisle, Alexander & Olson, 1997 for contradictory arguments), this study supports the analysis of these risk factors. However, race and income factors should not be the sole determinant for determining whether or not a child or family is at-risk, particularly because in some racial subgroups, low income families with no further risk factors had children who performed similarly in both academics and behavior when compared to the larger kindergarten sample. As this study concludes, various family profiles exist within families who exhibit the same demographic risk factors; therefore, other factors identified within the literature as possible contributors to the later academic and behavioral development of children within the school setting should also be given proper attention in conjunction with demographic risk factors.

The current study also provides knowledge regarding family risk factors that may be contributing factors toward later child academic and behavioral problems. This knowledge allows school administrators, school psychologists and teachers to give attention to those risk factors that are likely to differentiate groups of students from one another, thus making it easier to identify which students and families are more likely to

be at-risk and in need of further intervention. In analyzing general trends across racial/ethnic profiles, the risk factors of family educational involvement and parental depressive symptomotology tended to discriminate more when analyzing particular racial or ethnic groups, meaning that these factors had more variability across profiles. However, the extent that these factors played in determining third grade outcomes varied across racial/ethnic profiles. For example, Caucasian students whose families exhibited these risk factors simultaneously, as well as those whose parents with low educational involvement only, had lower academic achievement in third grade. Similarly, within the Latino sample, those parents with mental health concerns had children who scored lower on reading performance in the third grade; however, the factor of lower educational involvement yielded no differences in groups. Within the African-American sample, mental health and discipline concerns combined to contribute to greater levels of externalizing behaviors with these children, with little differences in academic achievement.

Therefore, it is important to understand that particular risk factors may be more salient within particular racial or ethnic groups and contribute largely to later child outcomes. Based on the results of the current study, family discipline patterns appear to be an important risk factor to address, as low income families in general, independent of racial background, tend to endorse more negative discipline practices than families of middle or higher class backgrounds. However, the role of discipline practices appears to be a significant factor to address within the context of African-American families, as this was the only racial group where it distinguished profiles from one another. In addition, those families who used highly practices had children with higher levels of externalizing

behavior when compared to children classified within other African-American family profiles. In the context of the school setting, this information is invaluable, as it may help professionals distinguish and identify families in need of intervention, such as parent training programs focused on behavioral management strategies and positive punishment practices.

Conversely, information from the present study also gives insight into possible protective factors that may prove beneficial for various families, particularly low income African-Americans. Students whose families used fewer negative discipline practices, as well as were involved in their education, had significantly better outcomes, particularly related to behavior. These factors appear to be an added layer of protection for African-American families against poor child behavioral outcomes. Therefore, interventions focused on improving parent-child relationships, increased positive discipline practices within the home, and methods of educational involvement would be beneficial to possibly change the trajectory of some families, as well as strengthen existing families utilizing these practices.

These findings indicate that schools must analyze specific risk factors within particular racial and ethnic groups to determine which students are at-risk, as a common risk factor that contributed to poor academic or behavioral outcomes was not evident across the entire sample. By analyzing specific risk factors within specific populations, schools professional can gain further information regarding which families would be candidates for intervention programming. At the same time, other factors used within the context of the study, such as parental values of school readiness and cognitive stimulation in the home environment had less variability. Although these may be factors of interest

and may reflect areas that can be addressed and modified within the context of family intervention, this study indicates that they are less important factors to consider in determining and identifying at-risk students and families within the school environment.

With this knowledge of empirical risk factors and family profiles that occur within entering kindergarten students, schools must start to think about the way they structure kindergarten screening, as well as its overall purpose and utility. Costenbader and colleagues (2000) described the need for furthering the philosophy of kindergarten screening; however, little has changed within the last decade. Given that best practices in schools center on prevention and early intervention of academic and behavioral problems, kindergarten screening appears to be a logical place for schools to restructure and revisit their ideas and practices.

Given that change is needed within the area of kindergarten screening, past literature and information derived from the current study highlight three areas that need to be addressed to improve effectiveness and increased utility. First, kindergarten screening continues to focus on the individual child and deficiencies, rather than also analyzing the systems that surround the child and targeting these with interventions. Prior theoretical knowledge (e.g., family systems theory, life course/social field theory) supporting the importance of analyzing and intervening at broader systemic levels beyond the individual child to bring about change (e.g., Minuchin, 1985; Kellam et al., 1985). In addition, findings from the current study regarding family risk profiles that are associated with later academic and behavioral concerns have an impetus for the structure and future of kindergarten screening practices. For example, the variables of parent depressive symptomotology, poor parental involvement in education and discipline

practices distinguished children within various racial/ethnic samples that were at later risk of having academic or externalizing behavior problems in elementary school. Although this study does not prove cause and effect, this information is still beneficial, as it suggests a correlation with early risk factors in the family environment and later educational concerns. Using this information, school systems can begin to broaden their philosophy of kindergarten screening and what risk factors are analyzed. If the sole purpose of these screening procedures is to identify which children are in need of further intervention in the school setting, both prior research, as well as the current study, validate the need for the family setting to be addressed within the context of screening.

Once the philosophy and underlying theoretical approach to kindergarten screening has shifted from an individual to a systems focus, schools must begin the task of determining how to implement screening practices in a way that is both informative, as well as feasible. Current screening practices targeting child characteristics typically involve administration of standardized screening measures to individual children one at a time by a qualified professional (Costenbader et al., 2000). This is both time consuming and unrealistic, particularly if measures to assess families will also be used in the near future. However, given our knowledge of family risk factors and the types of family profiles that may exist, particularly when families identify themselves as low-income, indirect methods of collecting information, such as questionnaires and surveys, could be useful in gathering critical information about students and families prior to school entry. This would allow for an efficient way to gather information on a large number of students and families, while still implementing evidence-based screening practices based on our

knowledge of empirical risk factors and family profiles, thus leading to enhanced identification practices and utility.

Screening and assessment practices should be functional and informative, leading to clear goals for intervention and treatment (Reschly & Ysseldyke, 2002) and the process of kindergarten screening should be no exception. Because schools tend to isolate child-centered characteristics in the current screening process, interventions are also formed which target only the child, thus leaving out important factors such as family dynamics and values that are associated with child outcomes. If screening practices can target and assess the family system and risk factors that exist within this environment, this information can then be used to highlight areas of concern within families, thus driving interventions that can be used to address these areas.

Currently, few schools offer family-based interventions for a number of reasons, including lack of time, expense, a lack of understanding of how to structure such interventions and a philosophy that schools should cater to students, not families (Adelman & Taylor, 2006). However, school professionals must be aware that family factors are associated with the outcomes of students, both positively and negatively. This study supports this argument, as children whose families had risk factors such as parental depression, poor parental educational involvement, and negative discipline practices were more likely to have poor academic and behavioral outcomes later in school, although the potency of the risk factors and the ultimate impact on later functioning were dependent on racial demographics as well. Across racial and ethnic groups, students who came from well-adjusted families, with few additional risk factors beyond race or income variables, had satisfactory functioning when compared with other profiles.

The notion that family factors are associated with student outcomes directly relates to the identification of students in need of special education. Evaluations conducted to determine special education eligibility and need, particularly for those students exhibiting behavioral difficulties in the school setting, are often focused on child behaviors solely, rather than examining the larger family context. Researchers have noted that this may contribute to the over-identification of African-Americans in special education, particularly those diagnosed within the Emotional Disturbance category, as little attention is given to family factors that may influence behaviors within the school setting (Artiles, Harry, Reschly & Chinn, 2001). Within the context of this study, results showed that various family factors differ based on racial makeup and are associated with later child outcomes. Therefore, family factors, the culture of a student, and practices within the home environment must be given proper attention and investigation when hypothesizing about a child's behavior, making educational decisions and providing intervention programming.

In conclusion, it is important to remember that the presence of early family risk factors that can easily be identified and associated with later outcomes must be addressed within the school setting if children are going to succeed academically and behaviorally. With the impetus placed on changing kindergarten screening and gaining more useful information about the family system, this can likely open the door for schools to think about intervention in a new way by focusing efforts on families in need, thereby helping at-risk children in the classroom.

Limitations

As with the majority of studies, limitations exist and this study is no exception. First, the derived solutions and number of profiles found within each racial subsample were based on fit statistics provided within the MPlus program (Muthen & Muthen, 2007). However, many of these statistics were not as concise or clear as one would hope, thus contributing to difficulties in determining the accurate solution for each racial/ethnic group within the study. This difficulty may have been influenced by the large number of participants within each subsample and the variability among participants, as research indicates many cultural differences within, as well as between, racial and ethnic groups (see King, 1981 for an in-depth discussion). Therefore, the solutions described within each profile should be interpreted with caution.

Difficulties in determining adequate solutions and profiles may have also been influenced by the risk factors chosen for examination within the study. Although the majority of risk factors were chosen theoretically and represented malleable family factors important within the transition to kindergarten, other risk factors that may have been deemed equally important using a different theoretical approach may have been omitted, thus influencing the quality of the results that were found. For example, Rathbun and colleagues (2005) found that demographic risk factors such as home language, immigration status, and family marital status had impacts on the cognitive ability and academic achievement of entering kindergarten students. It is often difficult to include the plethora of risk factors that may influence academic and behavioral child outcomes; given this information, the present study should be viewed in this manner, as the majority of chosen risk factors were proven to be important, yet may not encompass

every risk factor that should be given proper attention when attempting to identify children at-risk of later academic and behavioral difficulties at school entry.

Related to the risk factors chosen for the study is the issue of how variables were defined, specifically family income. Traditionally, studies within the social sciences focus on family socioeconomic status (SES) as a demographic risk factor, which differs from family income, as SES includes income level along with occupational status and level of attained education. Within the current study, family income was used; however, the inclusion of an SES variable may have yielded different results.

When examining third grade outcomes related to identified kindergarten family profiles, few significant differences were found when comparing profiles within racial/ethnic groups. However, comparisons were not examined between similar profiles across groups (e.g., comparing the Caucasian low educational involvement family profile with the similar African-American profile), making it difficult to determine how children in groups performed in comparison to other children. This technique would have allowed for more in-depth examination regarding the influence of race and ethnicity in later outcomes, given that the majority of other observed risk factors would have been held constant. In addition, because profiles were not derived for middle and upper class participants, it is difficult to understand the magnitude that low income status played in the development of the derived profiles.

Limitations exist when examining the developmental trajectory of participants over time. Although causation cannot be determined, it is assumed that the influence of negative family risk factors in kindergarten had some amount of impact on later academic and behavioral outcomes. However, protective factors and other intervention methods

were not measured or factored into the study; hence, it is difficult to understand how the developmental trajectory of particular groups may have been impacted, either positively or negatively, by the amount of intervention that may have taken place between kindergarten and third grade.

Finally, it is important to address statistical significant in relation to social validity. Within the study, differences found across outcomes when comparing various profiles were relatively small in terms of social validity, meaning that although significant effects are found, these translate into small differences in the real world. Therefore, although the study shows that family factors are associated with various child outcomes, there may also be a number of other variables which affect these same outcomes as well that should be given proper attention within future research.

Recommendations for future research

Future studies utilizing latent profile analysis to examine early family risk factors and later child outcomes would be highly beneficial. Given the knowledge and limitations derived from the current study, it would be beneficial to replicate and expand the current study to learn more about the various family profiles of entering kindergarten students. Due to the limitations of this study in regards to meaningful comparisons across racial, ethnic and income groups, a large study examining a secondary, representative sample of kindergarten students is necessary utilizing latent profile analysis. This would allow for more information regarding the types of meaningful profiles that exist within this population, which would either validate or disconfirm the profiles found within the current study. In addition, other malleable risk factors that may affect family functioning at school entry may be beneficial for inclusion within these

replication studies, while also determining which factors are significant in contributing large amounts of variance within later academic and behavioral outcomes.

After adequate profiles have been identified at kindergarten entry, it would be best to analyze student trajectories over time, giving proper attention to protective factors that exist within the family environment and within the individual child that may influence later outcomes. In addition, intervention programming that students and families may participate in over the course of the early elementary school years should be measured in terms of frequency and duration, as this programming is expected to improve later outcomes. This type of information would be helpful to analyze within the context of a latent transition analysis (Nylund, Muthen, Bellmore, Nishina, Graham & Juvoven, 2005).

Although the above information may be difficult and tedious to derive empirically, once it is completed it will provide beneficial information that can be applied directly within the school setting to identify at-risk kindergarten students and their families and provide needed intervention services that are most likely to alter developmental trajectories and lead to positive outcomes. At this stage of implementation, it may be advantageous to pilot and test kindergarten screening surveys that can be given directly to families to assess specific risk factors that occur within the family setting. Empirical studies validating this measure, along with applied studies to determine the feasibility and utility of this information in identifying at-risk children and families and planning interventions would be of utmost importance in the school setting. Although it may appear to be relatively easy to identify at-risk students using empirically sound theories, measures and practices, it will likely be much more difficult to implement

these practices in the real world. Hence, studies at this level should focus on teacher feasibility, sensitivity and specificity of identifying at-risk students and families, and the process of progress monitoring and data collection of intervention effectiveness.

Conclusion

As academic and behavioral issues rise in prevalence across American schools (National Center for Education Statistics, 2007; National Institute of Mental Health, 2007), it is becoming increasingly necessary to identify risk factors that are associated with later difficulties. This allows schools to identify children who are likely to be at-risk of being unsuccessful in the school setting and tailor interventions to meet their needs early in life. Ideally, a systemic approach involving identifying potential risk factors that co-occur within families should be utilized within kindergarten screening practices, given the importance of families in the lives of young children (Patterson et al., 1988; Shaffer, 2002) and the empirical literature that reinforces the fact that risk factors rarely occur in isolation (Rutter, 1979; Sameroff, 2000; Sameroff, Bartko, Baldwin, Baldwin & Seifer, 1998).

The purpose of this research was to identify family profiles of low-income entering kindergarten factors using observed family risk factors and determine how membership within various profiles was associated with later academic and behavioral difficulties. The findings of the study indicated that similar family profiles existed across racial groups involving mental health concerns, low educational involvement and high educational involvement, with negative discipline practices also being a distinguishable risk factor within the African-American sample. Few differences were found in third grade outcomes when comparing profiles within racial and ethnic groups. However,

significant differences that were found support the concept of cumulative risk, as those children with increased risk factors, both in number and severity, were more likely to have negative outcomes.

The current research adds to the literature by providing further information regarding how multiple risk factors manifest within families, as well as their association with later childhood concerns in the school setting. These results support previous research in various ways. First, family risk factors are acknowledged throughout the literature as contributors to child academic and behavioral outcomes (Patterson et al., 1988). Although this study did not prove causation, it shows association, supporting that the fact that theoretical approaches incorporating families within the identification, assessment and treatment process should occur when attempting to prevent and decrease childhood concerns. In addition, family risk factors often manifest in conjunction with one another and rarely occur in isolation (Sameroff, 2000; Sameroff, Bartko, Baldwin, Baldwin & Seifer, 1998), particularly when examining culturally and economically diverse families (Lee & Burkam, 2002). This knowledge offers several useful contributions for school-based professional practice, particularly in increasing our knowledge and understanding of potential family risk factors, improving kindergarten screening practices to identify at-risk children and families and tailoring interventions to meet the needs of children and families within the school setting.

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VITA

Elise Hendricker grew up in central Illinois, graduating from Beardstown High School in 2001. She received her B.S. in Human Development and Family Studies, with an emphasis in Child Development, from the University of Illinois in 2005. She then completed her M.A in School Psychology (2008) and her Ph.D. in School Psychology (2011) at the University of Missouri.

Elise completed her APA accredited pre-doctoral internship at Cypress-Fairbanks Independent School District in Cypress, Texas. She is currently employed there as a post-doctoral fellow, providing psychological services to students with emotional and behavioral concerns. She and her husband Brandon reside in Cypress, Texas with their dog Albie.