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A STUDY OF THE CONTEXT IN WHICH PROBLEM BEHAVIORS OCCUR
AND THE RELATIONSHIP WITH SOCIAL SKILLS

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Abstract

The aim of the present study was to examine the relationship between the context in which problem behaviors occur and social skills using the Adjustment Scales for Children and Adolescents (ASCA) phenotype scoring method (McDermott, 1994), the ASCA situtype scoring method (McDermott, Steinberg, & Angelo, 2005), and the Social Skills Rating System- Teacher Edition (SSRS-T; Gresham & Elliott, 1990). The relationship between the context of problem behaviors and social skills was hypothesized to better fit the data than the relationship between problem behaviors and social skills. Participants included 185 students from a rural school in Central Pennsylvania who were rated by 19 teachers. Due to limitations with sample size and constriction of range, the structural equation modeling models were not viable and canonical correlation analyses (CCA) were conducted to test the hypotheses. Results of the CCA found that problem behaviors and social skills were associated with specific academic settings. Students with behavior problems in academic or peer settings were more likely to have problems with cooperation and self-control; while students who exhibited behavior problems in teacher settings were more likely to have problems with assertiveness. In summary, findings from this study need to be viewed with caution given the homogeneous composition of the sample and the sample size of teachers and students, which resulted in a constricted range of scores and suspect findings about the measurement models.

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Introduction

Children are exposed to multiple environments and environmental demands throughout their lives. During the course of one day, they can move between settings such as their home, friends' homes, and school, as well as the larger community. Each environment is composed of a unique composition of adults and situations the child must learn to navigate multiplied by social and situational demands. Because each environment is distinct, children may behave differently within each environment and their behavior in turn may have an impact on their interactions and relationships with peers and adults. Furthermore, behaviors are intertwined with social skills. Previous research has examined both the immediate and longitudinal effects of childhood behavior disorders and the effects of social skills on peer relationships; however, the combination of problem behaviors and poor social skills can exacerbate their individual effects (Lewinsohn, 1974). For example, a student who hits other students will likely isolate himself from his peers because his peers will avoid him. With fewer opportunities to interact with peers, this student will not have the chance to improve his social skills and, therefore, his social skills may decline. This relationship between problem behaviors and poor social skills is also influenced by the context in which the behavior is performed because the context affects others' perceptions of the behavior.

The main objective of this study was to investigate the relationship between the situational context in which problem behaviors occur and social skills. Different contexts include differences in peer groups, adults, and activities and these differences affect a child's behavior. Depending on the context in which the behavior is performed, other children may perceive it as socially appropriate or inappropriate; therefore, the context of the behavior affects social skills. Although the relationship between problem behaviors and social skills has been previously researched, the effect of the context in which the problem behaviors occurs needs to be investigated.

Problem Behaviors

Internalizing and externalizing behaviors are two overarching categories of behavior disorders. Internalizing behaviors include anxious, depressive, inhibited, and withdrawn behaviors. In contrast, externalizing behavior problems refer to a group of behavior problems manifested in a child's outwardly directed behavior. If not properly addressed, both internalizing and externalizing problem behaviors that manifest in childhood may interfere with the development or use of appropriate social skills (Parker & Asher, 1987).

Parker and Asher (1987) conducted a meta-analysis with both retrospective and prospective studies to ascertain predictors of adult negative adjustment outcomes. The authors found that aggressive behavior in childhood is a more consistent predictor of later negative outcomes than shyness/withdrawn behaviors (Parker & Asher, 1987). However, when the childhood characteristics of adults with adjustment problems were examined (as was done in follow-back studies), shyness and withdrawn behaviors were frequently found in the childhoods of adults with adjustment problems (Parker & Asher, 1987). Therefore, shyness may not necessarily lead to negative outcomes, but adults with negative outcomes usually were shy children. On the other hand, aggressive behavior in children was predictive of negative outcomes. Parker and Asher (1987) noted that future research needed to confirm these findings. This study highlights the advantages of examining both retrospective and prospective studies when examining problem behaviors.

Internalizing disorders. Typically, internalizing disorders include depression, anxiety, social withdrawal, and diminished self-esteem (Merrell, 1994a). Identifying internalizing disorders is often problematic because they can be difficult to detect and syndromes often blend in a comorbid relationship. The major symptoms of internalizing disorders are dysphoric mood, social withdrawal, anxious and inhibited reactions, and the development of somatic problems (Merrell, 1994a). A strong comorbid relationship exists between symptoms.

Both Quay and Werry (1986), and Achenbach and Edelbrock (1978) developed empirically based dimensions of problem behaviors to identify types of internalizing behaviors. Quay and Werry (1986) identified two domains of internalizing behaviors including Anxiety-Withdrawal-Dysphoria and Schizoid-Unresponsive. The following behaviors defined the Anxiety-Withdrawal-Dysphoria domain: anxiety, fearfulness, shyness, sadness, social withdrawal, self-consciousness, and crying (Quay & Werry, 1986). The Schizoid-Unresponsive domain reflected unresponsiveness and extreme introversion (Quay & Werry, 1986). Achenbach and Edelbrock (1978) found one broad-band factor (or second-order factor) analogous to the term internalizing behavior, which is labeled the Overcontrolled syndrome. Falling under this syndrome are the Anxious, Depressed, Social Withdrawal, and Somatic Complaints narrow band (first-order factors) syndromes.

The nosological categories of internalizing disorders found in the *Diagnostic and Statistical Manual-Fourth Edition* (DSM-IV; American Psychiatric Association, 2000) include anxiety disorders, mood disorders, certain aspects of eating disorders, tic disorders, and somatoform disorders. The common internalizing disorders of childhood include anxiety disorders and depression. Other characteristics include withdrawal, isolation, and somatic complaints (American Psychiatric Association, 2000). According to Mash and Barkley (2003), prevalence rates for childhood anxiety disorders are greater than 10%, while the prevalence rate for childhood depression is around 3% for preadolescent children. Adolescent depression rates are comparable to adult rates at around 14% (Mash & Barkley, 2003).

Externalizing disorders. Externalizing disorders, also known as undercontrolled behaviors, include aggressive, acting out, disruptive, defiant, oppositional, and hyperactive behaviors (Merrell, 1994a). In addition to those characteristics, another common outcome of externalizing disorders is difficulty establishing peer relationships and an increasing likelihood

of association with a troublesome peer group (Knoester, 2003). Aggressive behaviors are important to study because their effects can continue into adulthood.

A meta-analysis of problematic behaviors identified three externalizing behavior domains: Attention-Deficit Hyperactivity Disorder (ADHD), Undersocialized Aggressive Conduct Disorder, and Socialized Aggressive Conduct Disorder (Quay & Werry, 1986). ADHD is characterized by problems in maintaining concentration and attention (Quay & Werry, 1986). Behaviors exhibited in this domain include both overactive and underactive behaviors (Quay & Werry, 1986). Overactive behaviors are characterized as fidgety and restless; underactive behaviors include passivity and withdrawnness. The DSM-IV contains three types of ADHD: Predominately Inattentive, Predominately Hyperactive, and the Combined Type (American Psychiatric Association, 2000).

Quay and Werry's (1986) second domain, Undersocialized Aggressive Conduct Disorder, is characterized by social isolation. Children who fall into this category tend to be socially isolated from peers probably because of their behaviors. Undersocialized Aggressive Conduct Disorder includes aggression, violation of rules, temper tantrums and irritability, and attention seeking and impertinence (Quay & Werry, 1986). Interestingly, Quay and Werry (1986) also found that hyperactive behaviors often occur concomitantly with Undersocialized Aggressive Conduct Disorder.

Frick et al. (1993), furthering the research of Quay and Werry (1986) conducted a meta-analysis of 60 factor analyses concerning parent and teacher ratings of children's behavior using a rating scale or structured interview. The Overt-Covert dimension, labeled Undersocialized and Socialized Aggressive Conduct Disorder by Quay and Werry (1986), accounted for the greatest amount of variance; however, a second factor or dimension of externalizing behaviors was also supported. This second dimension, Destructive-Nondestructive, refers to harmfulness and destructiveness to property. Destructiveness seems to distinguish between the DSM-IV

categories of Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD; Frick et al., 1993). Children who destruct property have more behaviors associated with CD rather than ODD.

Nosological methods for classifying behavior problems, namely the *DSM-IV* (American Psychiatric Association, 2000), include ADHD, ODD, and CD as externalizing behavior disorders. Prevalence estimates for externalizing disorders vary depending on the definitional criteria used, the special population studied, and the assessment methodology used (Merrell, 1994a). Most studies examining the prevalence of ADHD found rates in elementary school-age children between 4% to 5.5% (Mash & Barkley, 2003). Different disorders have wider ranges of prevalence rates. Mash and Barkley (2003) reported prevalence rates for ODD range between less than 1% to greater than 20%. Likewise, a large range was also reported for childhood CD with estimates ranging from less than 1% to just fewer than 10% (Mash & Barkley, 2003). The range of estimates may be due to the influence of developmental differences, gender differences, and poverty (Mash & Barkley, 2003). According to Merrell (1994a), the consensus among researchers is that externalizing problems tend to be quite common and a high percentage of children and adolescents exhibit externalizing symptoms. However, for many people these symptoms may not be severe enough to warrant a diagnosis of an externalizing behavior disorder.

Context of problem behaviors. Some problem behavior diagnoses call for the behavior to manifest across situations (e.g., ADHD). Therefore, one must understand the contexts in which people live and problem behaviors manifest to understand the development and maintenance of problem behaviors. One helpful theoretical conceptualization is Bronfenbrenner's (1979) ecology of human development that divides the context in which humans develop into certain overlapping global systems. The smallest and most widely studied system is the microsystem that contains any immediate context or environment that contains the child. Examples of

microsystems include the home and school environments. The mesosystem contains the relationships between the different microsystems. The exosystem extends beyond the microsystems to more general contexts that may have direct or indirect effects on the child. All of the people in the neighborhood produce direct and indirect effects on the child even though the child may not have direct contact with each member. Even more general is the macrosystem, which encompasses cultural and societal norms that affect the child's behavior, as well as society's view on what constitutes normal behavior. Children can be differentially affected by all of these systems (Bronfenbrenner, 1979).

The ecological view of childhood behavior disorders is that deviant behaviors are due to the contexts and persons with whom a child interacts, and that a child's actions or characteristics alone do not provide sufficient cause for behavior disorders (Algozzine, Serna, & Patton, 2001). Therefore, one cannot assume that a behavior problem would exist in all situations. A child's behavior at home may be drastically different from his or her behavior at school because of different interactions with environmental factors. Consequently, problem behaviors should be studied in the context or system in which they exist (Algozzine et al., 2001).

As stated previously, most research on problem behaviors focuses on the microsystem level and often on only one context within microsystems (Kiesner, Poulin, & Nicontra, 2003); however, given that children interact with multiple microsystems, these different contexts may provide unique experiences for the child that can lead to different courses of development (Kiesner et al., 2003). Kiesner et al. (2003) examined whether problem behaviors are affected by the context in which they are performed, specifically in school or out of school. The authors found that the behaviors exhibited in both peer groups were consistent with the behavior of the individual studied and had characteristics in common with the individual that the other group did not have (Kiesner et al., 2003). For example, the individual may share an interest in basketball with one group and an interest in reading with another group. Each group provided the individual

with unique behavioral opportunities and, consequently, the individual behaved differently. These differences may result in different learning or reinforcement experiences across the different contexts (Kiesner et al., 2003). When the authors examined gender differences, they found that girls selected peer networks based on context specific behaviors and chose peers in the specific network based on the context (e.g., girls friends in school may behave very differently from their friends in the neighborhood). Boys seemed to select after-school networks based on their in-school networks. In other words, boys may select friends in school and then continue to meet the same friends after-school, whereas girls tend to interact with different peer groups in school than out of school (Kiesner et al., 2003).

Childhood problem behaviors not only affect the child, but also the individuals around the child. Children in peer groups are both influenced by others' problem behaviors and in turn exert their own effects on others' behavior. Peers can condone externalizing behaviors and exacerbate the problems. Problem behaviors, whether externalizing or internalizing, can also lead to social isolation. Children who are withdrawn or socially isolated due to behavior deficits tend not to respond to the social initializations of others. In other words, they may lack the necessary social skills needed to making and keeping friends. In turn, a lack of social skills may accompany immature or socially inadequate behaviors that perpetuate the problem by making the child an easy target for derision (Merrell, 1994a).

Social Skills

Definition. To define social skills, distinctions must be made between the various terms associated with social skills (Merrell, 1999). The terms social skills, social competence, adaptive behavior and peer relations are often used together and researchers disagree about the relationship among them. Social competence is defined as "a complex, multidimensional construct that consists of a variety of behavioral and cognitive characteristics, as well as various aspects of emotional adjustment, which are useful and necessary in developing adequate social

relationships and obtaining desirable social outcomes” (Merrell, 1999, p. 309). According to Merrell (1999), social skills are “specific behaviors, that, when initiated, lead to desirable social outcomes for the person initiating them” (p. 309). Examples of behaviors labeled social skills are academic and task-related components, cooperation with peers, reinforcement of peers’ behaviors, and social initiation behaviors (Merrell, 1999). These skills are necessary in order to effectively interact with and maintain relationships with peers, teachers, and family members (Kolb & Hanley-Maxwell, 2003). Adaptive behavior refers to the degree to which a person adjusts to meet the requirements of the environment (Salvia & Ysseldyke, 1998)—the performance of behaviors required to meet the demands of the environment. Adaptive behavior is a developmental construct; therefore, it must be assessed within cultural and environmental contexts. The term peer relations refers to a child’s acceptance from their peers. In general, positive peer relationships are associated with peer acceptance, whereas negative peer relationships correlate with rejection from peers (Merrell, 1999).

Bierman, Miller, and Stabb (1987) studied 32 peer-rejected boys and the effects of social skills training. Results revealed that children instructed to promote positive social behaviors initiated and received fewer negative behaviors than did children in the other groups. These children also received more positive peer interactions than boys in the other groups (Bierman et al., 1987). In contrast, boys who were taught to reduce negative social behaviors initiated fewer negative behaviors, but did not receive any long-term positive behaviors from their peers (Bierman et al., 1987). Boys in the combined treatment group showed immediate post-treatment decreases in negative initiations, later decreases in negative peer responses, and stable positive peer interactions (Bierman et al., 1987). This study supports an association between social skills and peer acceptance.

Gresham (1986) proposed a hierarchical relationship between the components of social competence (i.e., adaptive behavior, social skills, and peer acceptance) with social competence

acting as the superordinate construct and adaptive behavior, social skills, and peer relationships as subordinates; however, debate exists regarding the directional relationship of the components. Merrell (1999) argued that adaptive behavior is the superordinate construct that subsumes social competence as one of the subordinate constructs. This view aligns with the definition of mental retardation from the American Association of Mental Retardation (AAMR; 1992), which defines social competence as one component of the broader concept of adaptive behavior. Merrell also viewed peer relationships as a product of social skills and not a separate component of adaptive behavior; as a result, the quality of a person's social skills influences their peer relationships (Merrell, 1999). The relationship between social competence, social skills, adaptive behavior, and peer relationships proposed by Merrell (1999) is considered superior to other models given its empirical support (Bruininks, Woodcock, Weatherman, & Hill, 1984; McFall, 1982). However, the connection between social skills and peer relationships is probably more complex and may be reciprocal in nature (Merrell, 1999). Thus, the study of the relationship between peer rejection and problem behaviors is as warranted as the study of the relationship between social skills and problem behaviors because social skills and peer rejection go hand in hand.

Social skills. The development of social skills is important for the development of adequate peer relationships (Gresham & Elliot, 1990; Merrell, 1999). Moreover, social skills and peer relationships significantly affect academic success. In addition, inadequate social skills are related to a variety of negative outcomes that continue into adult life. Because social skills affect many aspects of a child's life such as schoolwork, friendships, and adult adjustment, social skills are a necessary component of development. Parents seem to concur with this perspective. Parents of middle school students diagnosed with learning disabilities, mental retardation, and emotional or behavioral disabilities were asked if social skills should be included in their child's educational programming (Kolb & Hanley-Maxwell, 2003). Although the sample size was small

($N = 11$), parents acknowledged that social skills education is an essential activity for middle school students (Kolb & Hanley-Maxwell, 2003).

As stated previously, many definitions of social skills exist given the different theoretical models. A review of theories and definitions of social skills by Merrell and Gimpel (1998) found 15 different definitions. In general, social skills are behaviors that allow a person to interact effectively with others (Gresham & Elliot, 1990). More specifically, the performance of adaptive social skills increases the probability of reinforcement of those behaviors and decreases the probability of punishment or extinction of those behaviors (Gresham & Reschly, 1987). Therefore, social skills are specific behaviors that lead to desirable behaviors for the person performing them (Merrell, 1999). On the other hand, maladaptive social skills often lead to social failure (Bornstein, Bellack, & Hersen, 1977). Children who have social skills deficiencies are at a disadvantage for acquiring behaviors necessary for effective social functioning (Bornstein et al., 1977). Specifically, social skills enable people to know (a) what to say, and (b) how to behave in diverse situations. Effective social skills include helping, sharing, requesting help, giving compliments, and initiating relationships.

According to Gresham and Elliot (1984), three definitions of social skills are typically used in research literature. First, the peer acceptance definition, used when peer sociometrics are used to operationalize social skills, refers to children and adolescents perceived as socially skilled when accepted by their peers (Gresham & Elliot, 1984). However, this definition fails to identify the specific behaviors that lead to peer acceptance (Gresham & Elliot, 1984). The second definition identified by Gresham and Elliot (1984) is the behavioral definition that defines social skills as “situation specific responses which maximize the probability of maintaining reinforcement and decrease the probability of punishment or extinction contingent upon an individual’s social behavior” (p. 292). This definition addresses the problems of the peer acceptance definition because the antecedents and consequences of social behaviors are

identified and operationalized for assessments. However, researchers who use this definition frequently fail to identify the behaviors that are socially significant or socially important (Gresham & Elliot, 1984) and without this piece of information, an intervention may target inconsequential behaviors. The social validity definition is that social skills are “those behaviors which within a given situation, predict important social outcomes such as (a) peer acceptance or popularity, (b) significant others’ judgments of behavior, or (c) other social behaviors known to correlate consistently with peer acceptance or significant others’ judgments” (Gresham & Elliot, 1984, p. 292). This definition improves upon the problems associated with the behavioral definition of social skills by focusing on the specification of behaviors that the child is deficient or socially skilled with that are concomitantly related to socially important outcomes (Gresham & Elliot, 1984).

Once researchers define the construct of social skills, the observable behaviors associated with the construct can be identified. Caldarella and Merrell (1997) sought to identify the dimensions of social skills for children and adolescents. The most frequently occurring social skills these authors uncovered were Peer Relationships and Self-Management, each occurring in 52.4% of the studies reviewed (Caldarella & Merrell, 1997). The Peer Relationship dimension included several specific behaviors: (a) complimenting or praising others, (b) offering help or assistance, and (c) inviting others to play or interact. Behaviors in the Self-Management dimension included the following: the ability to control one’s temper, to follow rules and limits, to compromise with others, and to receive criticism well (Caldarella & Merrell, 1997). The Academic Skills dimension occurred in 47.6% of the studies and included (a) accomplishing tasks or assignments independently, (b) completing individual seatwork/assignments, and (c) carrying out teacher directions. In 38.1% of the studies, the social skill behavior included was complying with appropriate requests made by others, which was deemed the Compliance dimension. The fifth dimension, labeled Assertion, occurred in 33.3% of the studies. Behaviors

in this dimension included (a) initiating conversations with others, (b) acknowledging compliments, and (c) inviting others to interact. Thus, the most common social skills behaviors are peer relationships, self-management, academic skills, compliance, and assertion (Caldarella & Merrell, 1997).

Methods of Assessing Social Skills and Problem Behaviors

Four major assessment methods are available to evaluate social skills and problem behavior: direct behavioral observation, behavior rating scales, interviews, and self-reports. Sociometric approaches are another method of assessing social skills. Each method has potential benefits and drawbacks. Direct behavioral observation may be the most ecologically valid method of assessment (Elliot & Gresham, 1987). Analogue observation systems, through which an observer anecdotally records the student's behaviors, are useful to define the problem. Interval-based coding systems can measure the frequency of behaviors in a natural setting. Whole interval recording requires an observer to pay attention to the behaviors during the entire session, while partial interval recording requires an observer to pay attention to the behavior at a specific time during the interval, such as the beginning or end of the interval (Elliot & Gresham, 1987).

The scores from a behavior rating scale must demonstrate adequate reliability, to ensure the consistency and stability of the scores, and adequate validity, to ensure that the scores are assessing what the measure purports to assess. For example, if a respondent has limited reading skills, the scale may really be measuring reading ability rather than a measure of behavior. Problems with behavior rating scales can occur with the rater. Parents' ratings of child psychopathology may be more indicative of parental psychopathology than child psychopathology (Brody & Forehand, 1986). Teachers are superior informants to parents or other classroom observers because they are unobtrusive observers in the classroom, their ratings tend to be consistent, and they have many children to compare with over time (Brandon, Kehle,

Jenson, & Clark, 1990). Additionally, behavior rating scales may be problematic when raters give their perceptions of specific behaviors (Merrell, 1999). Behavior rating scales provide a general idea of the behavior, but cannot provide observational data concerning frequency and rate of the behavior (Merrell, 1999). Other potential measurement problems associated with behavior rating scales include biases of response, the halo effect, the leniency or severity effect, and the central tendency effect (Merrell, 1999). Four types of error variance may produce measurement problems including source variance, setting variance, temporal variance, and instrument variance.

Although potential measurement problems exist with behavior rating scales, many advantages are also inherent to using them (Merrell, 1999). First, behavior rating scales are less expensive than direct observations and require less training. Additionally, in comparison to direct observations, behavior rating scales can provide data on low frequency behaviors often missed in direct observations. Behavior rating scales provide a relatively objective assessment method for problem behaviors and social skills that occur in the child's natural environment. This type of assessment can also provide data on children unable or unwilling to provide information on themselves because informants highly familiar with the child's behavior, such as parents or teachers, can be used.

Though interviews are the most frequently used method for assessing social skills and problem behaviors, little support is found for their use with social skills (Elliot & Gresham, 1987). Social skills are difficult to assess through interviews because the interviewer is dependent upon self-reports from children, adolescents, or third party reports (Merrell, 1999). Children with poor social skills who concurrently experience peer rejection may provide biased responses because of defensiveness or hurt (Merrell, 1999). Similarly, children with problem behaviors may provide false reports of their own behavior. Nevertheless, an interview may be a useful addition to other information concerning problem behaviors and social skills. Comparable

to the problems associated with interviews, self-report ratings are also susceptible to biased reports from children with social skills deficits and problem behaviors.

Sociometric approaches are useful because students' peers rate one another's behavior. While sociometric approaches are more useful for investigating peer relationships rather than social skills, this method is still useful because social skills and peer relationships are closely related (Merrell, 1999). In fact, peer relationships are often an outcome of social skills, and in turn, further influence social skills (Merrell, 1999). Notably, information from sociometric techniques are not interchangeable with that from behavior rating scales, which are measures of behavior such as aggression and shyness/withdrawal (Parker & Asher, 1987). Non-behavioral characteristics (e.g., physical attractiveness) influence peer rejection, which leads to differences between sociometric measures and behavior rating scales (Parker & Asher, 1987).

Regardless of the assessment method utilized, all assessment measures' scores must demonstrate adequate psychometric properties including sufficient evidence of reliability and validity. Adequate levels of reliability ensure the stability of the scores produced from the measure. Additionally, adequate validity ensures that the scores are assessing what the measure purports to assess. Without sufficient score validity evidence, the instrument may measure a different construct than what the authors claim it measures. Before an instrument is used, the examiner must inspect the validity evidence concerning the interpretation of the scores.

The Relationship Between Problem Behaviors and Social Skills

Studying the relationship between problem behaviors and social skills is important because research has indicated that poor social adjustment is a significant predictor of problem behaviors and maladjustment (Coie & Dodge, 1983). Although the specific mechanism defining the relationship between social skills and problem behaviors has yet to be definitively established, researchers have found relationships between the two constructs evidenced by the following points (Hartup, 1979; Smith, 2002). First, a deficiency of social skills is associated

with discomfort, anxiety, and a general unwillingness to engage in social activities (Hartup, 1979). Reciprocally, children who are socially rejected by their peers may also exhibit very high or low self-esteem, may be dependent on adults for emotional support, or may be anxious or inappropriately aggressive (Hartup, 1979). Second, there is evidence that children practice managing aggression within the context of peer relations (Hartup, 1979). Third, although peer relations may not directly influence intellectual abilities, peer relations may affect the ability to use intellectual abilities effectively (Hartup, 1979). Fourth, peer-rejected children have higher delinquency rates as adolescents, are more likely to drop out of school, and are at risk for emotional difficulties (Hartup, 1979).

Parker and Asher (1987) described two different models depicting the link between peer relations and problem behaviors. As stated previously, peer rejection and social skills are closely related; thus, studies concerning the relationship between peer rejection and problem behaviors, and the relationship between social skills and problem behaviors are presented. The first model is a causal model and describes a pattern where children excluded from normal patterns of peer interaction are also excluded from normal socialization experiences and as a result, develop behavior problems. According to this model, social skills are necessities not luxuries (Parker & Asher, 1987).

On the other hand, the premise of the other model, labeled incidental, is that early forms of the disorders that emerge fully in adulthood negatively influence the interpersonal relationships in children (Parker & Asher, 1987). However, poor peer relations are peripheral outcomes to adult adjustment problems and not the cause of them. In other words, the early childhood characteristics of the disorder that will emerge in adulthood negatively affect childhood relationships, but these negative relationships do not cause the disorders (Parker & Asher, 1987). Neither model is sufficient. Parker and Asher (1987) suggest that a more

comprehensive model would combine both models to maximize the number of potential pathways people take from peer relations to problem behaviors.

Other researchers have examined the relationship between social skills and specific problem behaviors. Dodge (1980) reported that differences in one type of externalizing behavior, aggression, may continue throughout development. Dodge (1980), conducting a series of studies on aggression and social skills, found in the first study that aggressive and nonaggressive boys differentiated their retaliatory behavior according to the clearly stated intention of the peer instigator. Differences between aggressive and nonaggressive boys were noted when the intentions were ambiguous (for which the peer instigator did not clearly state their intentions). In ambiguous situations, boys labeled by peers as aggressive reacted aggressively, as if the peer's intentions were hostile, whereas the nonaggressive boy acted with restraint, as if the peer's intentions were benign (Dodge, 1980). According to Lesser (1959), aggression perceived as warranted correlated positively with popularity, whereas unwarranted aggression correlated with social rejection. Therefore, some forms of aggression may increase a student's social standing and lead to peer acceptance, but boys who cannot control their aggressive behavior are likely to have peer-rejection problems.

In the second study Dodge (1980) reported that boys who interpreted an ambiguous intention as hostile were more likely to attribute hostile characteristics to the peer, to expect continued aggression from the peer, and to mistrust the peer. The author hypothesized that these characteristics carry over into subsequent situations and can start a cycle of increased aggressive behavior and social rejection, and the results supported his hypothesis. As the children developed, more negative consequences were attributed to the aggressive label (Dodge, 1980). For example, as aggressive children develop they may learn of the label, which may justify their aggressive actions (Dodge, 1980). Another study confirmed the cyclical nature of aggressive

behavior. Peers stated that they were more likely to act aggressively toward peers they perceived as aggressive than toward peers perceived as nonaggressive (Dodge & Frame, 1982).

Researchers have also studied the link between DSM-IV disorders and social skills. Because only a handful of the multiple symptoms associated with ADHD reflect possible interpersonal problems, poor social skills are not automatically associated with the disorder. However, children diagnosed with ADHD tend to be “intrusive, boisterous, annoying, and generally aversive to peers and others” (Landau & Moore, 1991, p. 1) and these behaviors tend to create social difficulties. Douglas (1980) hypothesized that hyperactive children may have less than adequate social skills because of their inability to attend and consequently misinterpret social cues and perform socially inept behaviors. This hypothesis was examined in a study concerning girls diagnosed with ADHD who manifested aggressive behavior. Zalecki and Hinshaw (2004) found that girls diagnosed with either form of ADHD (i.e., predominately inattentive or predominately hyperactive) were more physically and relationally aggressive than a group of comparison girls. Furthermore, both types of aggression were significantly correlated with negative sociometric ratings for all groups. However, the girls diagnosed with ADHD predominantly inattentive type (ADHD-I) and nondiagnosed girls had peers who wanted to be their friends. The authors concluded that girls will dislike and fail to befriend overtly and relationally aggressive girls (regardless of their diagnosis), but girls with ADHD-I and nondiagnosed girls may be subtle with their relational aggression and know when to stop aggressive behaviors in order to make and maintain friendships (Zalecki & Hinshaw, 2004). Girls with ADHD combined type may not be able to understand subtle cues or be able to stop their aggressive behavior in order to keep friends (Zalecki & Hinshaw, 2004). Therefore, physical and relational aggression leads to social problems.

Children exhibiting externalizing problems may have trouble with social skills because of an outwardly directed behavior that interferes with appropriate social skills. These children often

have social skill deficits. On the other hand, children exhibiting internalizing problems may experience social skill problems because of the presence of an emotional arousal response. Previous research has focused on teaching social skills to socially anxious children; however, more research has uncovered that socially anxious people are not anxious because they have maladaptive social skills, but instead because they *think* they do not have appropriate social skills (Cartwright-Hatton, Hodges, & Porter, 2003). Therefore, given the presence of an emotional response, children with social anxiety do not have a skill deficit they have a performance deficit. Teaching social skills to someone who already possesses that knowledge is fruitless and may further affect their skill appraisals (Cartwright-Hatton et al., 2003).

Cartwright-Hatton et al. (2003) examined self-reports and observer ratings of the social skills of socially anxious children. Researchers asked 110 children aged 8 to 11 to videotape a short speech, rate their skills on a performance questionnaire that assesses social skills and nervous behaviors, and complete a measure assessing their social anxiety. Observers also rated the children's social skills and nervous behaviors on an observer form of the questionnaire. A relationship was found between social anxiety and poor self-ratings of social skills. However, some socially anxious children who rated their skills as low received high ratings from observers. The only differences observers noted between anxious and nonanxious children were nervous behaviors, such as stumbling over words. Therefore, Cartwright-Hatton et al. (2003) determined that socially anxious children do not necessarily have maladaptive social skills, but they may believe that their social skills are poor. A limitation of the study is that results can only be generalized to similar types of situations and the results may not generalize to other types of social situations (e.g., a classroom with other students). More research is needed to support these findings.

Depressed children may experience social skill deficits as well. Social skill deficits lead to less interaction among peers, which results in fewer opportunities for response-contingent

positive reinforcement for prosocial behaviors (Lewinsohn, 1974). On the other hand, depressed individuals, in comparison to control participants, display fewer prosocial skills such as friendliness, warmth, reasonableness, eye contact, and adaptive gestures (Lewinsohn, 1974). Although research verifies a link between internalizing behaviors and social skills deficits, the path has yet to be determined.

The preceding paragraphs described the potential effects of problem behaviors on social skills; conversely, poor social skills and negative peer status affect the development of maladaptive behaviors in adolescence and adulthood (Dodge, Coie, & Brakke, 1982). Although the peer acceptance definition of social skills is a weak one, because it fails to identify the specific behaviors that lead to peer acceptance, studying the impact of negative peer status is important because children with such a status often concomitantly exhibit poor social skills (Gresham & Elliot, 1984). Dodge et al. (1982) conducted two studies examining the differences among rejected, average, and popular fifth-grade students in a semi-rural North Carolina public school. In the first study, 101 fifth graders completed a sociometric interview and selected from a roster the names of three peers whom they liked the most and liked the least. Scores for each child were computed and combined to form a measure of social preference for popularity (Dodge et al., 1982). Dodge et al. (1982) found that rejected children spent less time in appropriate solitary activities than average and popular children did and they approached children at inappropriate times more often than average or popular children did. The authors concluded that the rejected children's peers deemed the behaviors inappropriate because they rejected these approaches at a higher rate than they did the approaches of other children (Dodge et al., 1982). Dodge et al. also found that the rejected children initiated more than twice as many peer-directed aggressive acts than average or popular children. A second study by the researchers found similar results. Additionally, the neglected group participated in more solitary-task-appropriate behaviors than any other group (Dodge et al., 1982). The rejected group displayed more solitary-

task-inappropriate behaviors than any other group (Dodge et al., 1982). Rejected children may need to improve the timing and quality of social approaches and reduce the frequency of aggressive acts to improve their peer-relations. In contrast, the neglected group needs training and coaching in the initiation of social interactions to improve their peer relations (Dodge et al. 1982).

Peer-rejected children who associate with physically or relationally aggressive peers may develop physical or relational aggressive behaviors (Werner & Crick, 2004). Werner and Crick (2004) examined the effects of peer rejection and associations with physically and relationally aggressive children on 979 children in second, third, and fourth grade. Children were followed for one year to determine the effects of rejection and aggressive peers. Researchers found that peer rejection and association with aggressive peers produced changes in the target child's aggressive behaviors. Both boys and girls increased their physical aggression as a result of rejection and association with physically aggressive peers; however, differences based on gender and type of aggression were noted. Increases in relational aggression due to higher levels of rejection and association with relationally aggressive peers were found only for girls. The authors concluded that peer rejection and exposure to physically aggressive peers are important for the development of physical aggression for boys and girls, but the development of relational aggressiveness is unique to girls. Girls are possibly more vulnerable to relational aggression than boys are because social relationships may be more valued by girls than boys (Werner & Crick, 2004).

The context of problem behaviors and social skills. The degree and strength of the relationship between problem behaviors and social skills may be influenced by the context in which the behaviors occur. Children behave differently in various situations due to the environment and people within the situation. For example, children behave differently in a roomful of adults than in a roomful of other children. Students may behave differently in the

classroom than they behave on the playground due to the different demands of the environment and the differences in people. Behaviors that teachers and other students may find acceptable on the playground (e.g., running) would not be acceptable during class time. The different demands on the environment may affect the relationship between problem behaviors and social skills, and as children grow and are exposed to more environments and people, they may change with whom they associate.

Kiesner and Pastore (2005) tested through structural equation modeling the hypothesis that antisocial behavior is positively associated with peer acceptance during adolescence. As stated previously, the peer acceptance definition is a poor definition of social skills (because it fails to define the behaviors that lead to peer acceptance), but peer acceptance is related to social skills and, therefore, is important to study. Differences were found between classroom and out of school peer preferences (Kiesner & Pastore, 2005). In sixth grade, a negative and significant relationship was found between antisocial behavior and classroom peer preference, but no significant relationship existed between antisocial behavior and out-of-class peer preference (Kiesner & Pastore, 2005). In other words, students tended to not associate with peers who exhibited problematic classroom behaviors while in school, but might have associated with students who misbehaved outside of school. As students progressed to eighth grade, their preferences shifted in that antisocial behavior was not significantly related to in-class peer preference, but it was positively significantly related to out-of-class peer preference (Kiesner & Pastore, 2005). The students were drawn to other students who performed maladaptive behaviors outside of school. Similarly, Bukowski, Sippola, and Newcomb (2000) found an increase in the attractiveness of aggressive peers following entry into sixth grade reflecting an increased tolerance of aggressive behaviors as students grow. According to these studies, students who exhibit antisocial behaviors become more accepted by peers during adolescence, and the context

in which these behaviors occur has an impact on the relationship between behavior and social skills.

Kiesner and Pastore provide several explanations for their findings. One, differences were found between in-class and out-of-class contexts because students are not able to choose classmates, as they are able to choose out of school peers. In addition, as students get older, they engage in behaviors that seem more mature (e.g., smoking, drinking, and stealing). These types of behaviors may be more appealing than disruptive classroom behaviors. Antisocial adolescences that perform these behaviors are more appealing because they appear older. Additionally, as adolescents mature, they gain independence from parents and are able to associate with students who perform antisocial behaviors. Finally, the context in which problem behaviors are conducted can determine the relationship to social skills (Kiesner & Pastore, 2005).

Purpose of the Study

As evidenced above, social skills and problem behaviors are interrelated (Parker & Asher, 1987). Specifically, problem behaviors may interfere with the development or use of appropriate social skills, and in turn, poor social skills can lead to problem behaviors (Cowen, Pedersen, Babigan, Izzo, & Trost, 1973; Dodge et al., 1982; Douglas, 1980; Hartup, 1979). If problem behaviors are reinforced in place of socially appropriate behaviors, the problem behaviors will occur more frequently (McDowell, 1982). This premise is based on Herrnstein's mathematical statement of the law of effects, in that a response is governed by two things: (1) reinforcement obtained for responding, and (2) reinforcement obtained from all other concurrent sources (McDowell, 1982). Therefore, an intervention that addresses social skills may be fruitless if it does not concurrently address problem behaviors. The context in which behavior problems occur affects social skills. Behaviors may be acceptable in one context and, therefore,

promote positive social skills, but the same behaviors may be unacceptable in another context and inhibit the development of positive social skills.

The aim of the present study was to examine the relationship between the context in which children's problem behaviors occur and social skills using structural equation modeling (SEM). Two models were proposed to examine how well the *context of problem behaviors* predicts social skills compared with how well *problem behaviors* predicts social skills. The Phenotype Model, presented in Figure 1, depicts the hypothesized relationship of problem behaviors, externalizing and internalizing behaviors, and social skills, defined as cooperation, assertion, and social control. Figure 2 presents the second model, the Situtype Model, which depicts the hypothesized relationship of the context of problem behaviors, peer, academic, and teacher, and social skills, also defined as cooperation, assertion, and social control. The relationship between the context of problem behaviors and social skills was hypothesized to better fit the data than the relationship between problem behaviors and social skills. Therefore, teachers' scores from rating scales that account for the context in which children's behaviors occur will better fit the sample data than teachers' scores on a rating scale that do not account for the context of children's behavior. These models are discussed in more detail in subsequent sections.

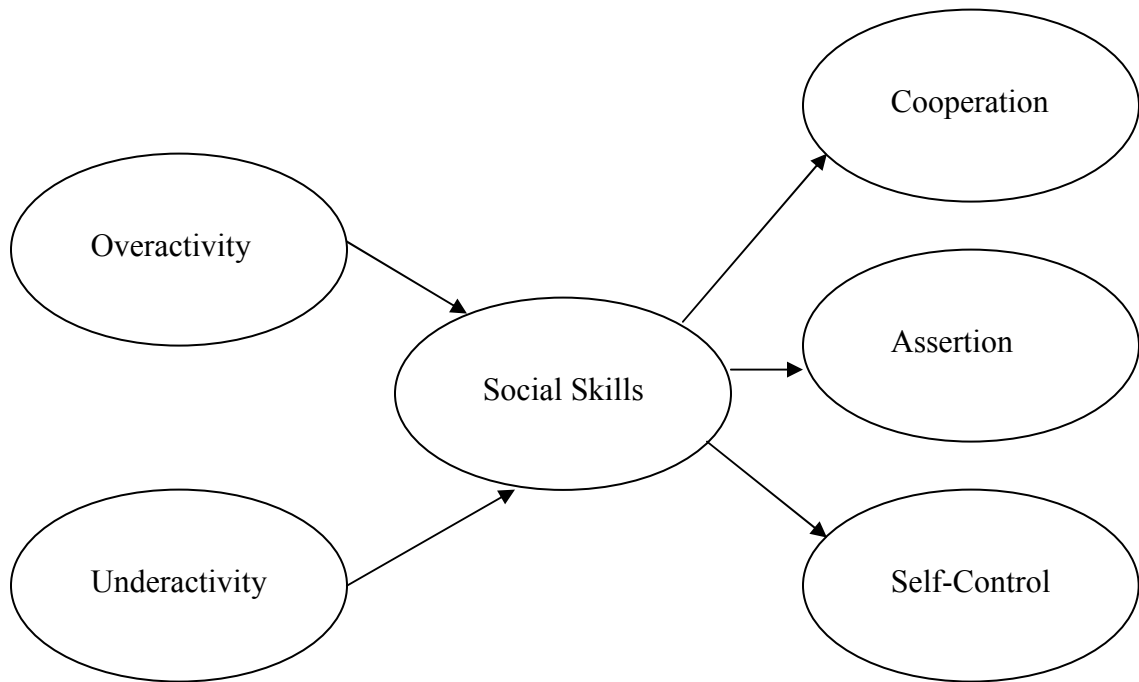


Figure 1. Phenotype model: Hypothesized relationship between problem behaviors and social skills.

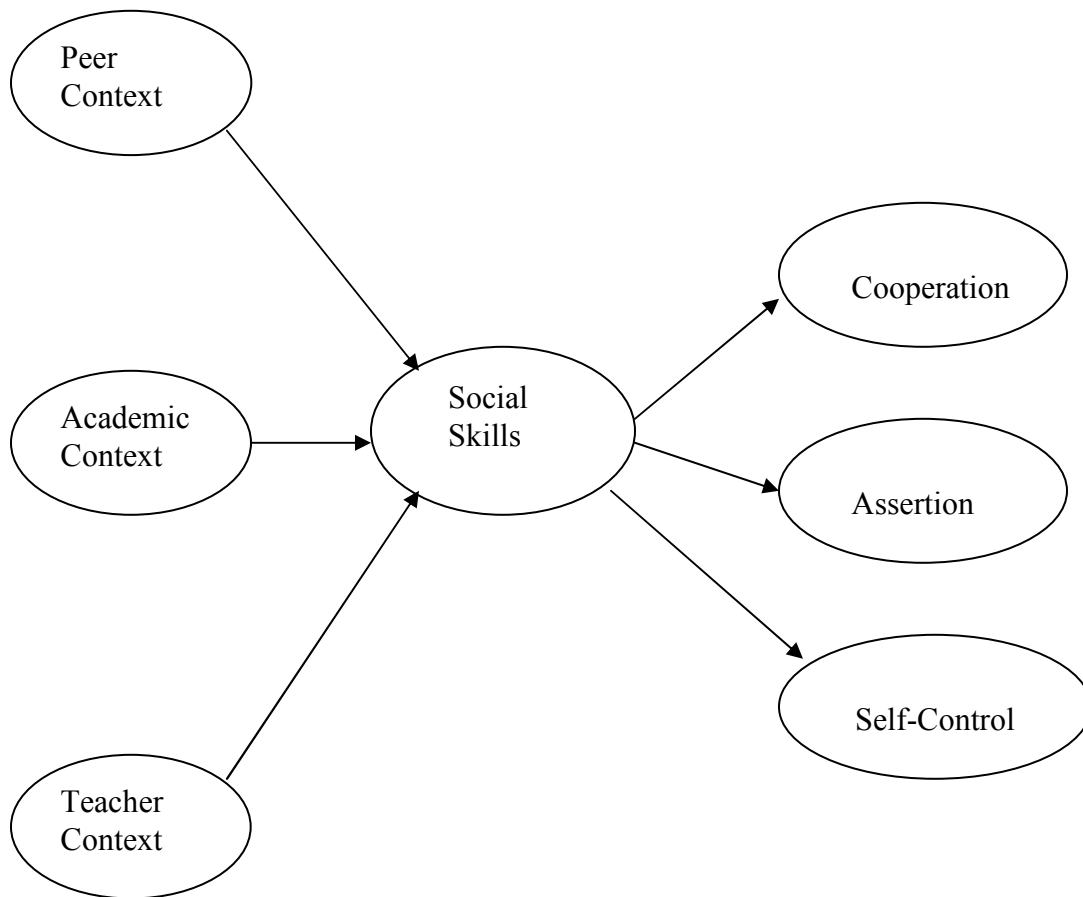


Figure 2. Sitotype model: Hypothesized relationship between the context of problem behaviors and social skills.

Method

Participants and Procedures

Data were collected from 19 classrooms (grades kindergarten to 5) in two rural schools located in central Pennsylvania. According to the Standard and Poor's website (*School Matters*, 2005), 40.5% of the students in this district are considered economically disadvantaged and about 25% receive a free or reduced lunch. Across the district, 99% of the students are Caucasian and 13.4% are students with disabilities.

Teachers distributed the consent notices to their students, who were instructed to give the notices to their parents. Although consent notices were initially sent home to 530 students, 188 students either did not return the permission slips or their parents did not authorize permission. Consent was obtained for 342 students and from that pool 200 students were randomly selected to participate. Due to the demographics of the school at which the data was gathered, a stratified random sample based on the latest census could not be obtained; a random sample was used in order to generalize to a larger population. Participants' teachers received Adjustment Scales for Children and Adolescents (McDermott, Marston, & Stott, 1993) and (Social Skills Rating System-Teacher Form (Gresham & Elliot, 1990) protocols during a teacher in-service meeting and the teachers were asked to complete and return the protocols by the end of the meeting. The protocols were presented to the teachers in a counterbalanced order to account for order effects. Thirteen incomplete protocols were omitted from analyses. Therefore, complete protocols were collected from 187 students. Table 1 provides a summary of the sample size of the data based on grade and gender.

Measures

Adjustment Scales for Children and Adolescents. The Adjustment Scales for Children and Adolescents (ASCA; McDermott et al., 1993) is a standardized behavior rating scale for children

Table 1

Sample Distribution of Data Based on Gender and Grade.

	K	1	2	3	4	5	Total
Male	15	20	13	20	11	13	92
Female	17	16	19	14	14	15	95
Total	32	36	32	34	25	28	187

Note. $N = 187$.

aged 5 through 17 completed by teachers to assess behavior pathology, which is determined through its presence in multiple social, recreational, and learning situations. Examples of the situations include answering teachers' questions, working alone, playing in informal or unorganized situations, standing in line, playing team games, maintaining friendships, approaching new learning, and controlling outbursts. The ASCA allows for problem behaviors to be assessed in two ways: phenotype and context (situtype).

Phenotype scores. The ASCA has 96 items designed to measure behaviors reflecting overactivity (e.g., ADHD, aggressive, and defiant behaviors) and underactivity (e.g., timid, fearful, and avoidant behaviors). Teachers are instructed to endorse behavioral descriptors pertinent to the situation that best describes the student for each of the 96 items. Teachers can endorse as many of the 3 to 8 behavioral descriptions that apply to the student or leave all the descriptors blank if they do not apply. The original scores produced by the ASCA, phenotype scores, are determined by summing the raw scores for each of the six core phenotypic syndromes and the two supplemental phenotype score syndromes. The core syndromes include the following: (a) Attention-Deficit Hyperactivity (inattentive, attention-seeking, or restless behavior); (b) Solitary Aggressive (Provocative; intimidating and overtly confrontative behavior); (c) Solitary Aggressive (Impulsive; impulse-ridden or habit-driven behaviors); (d) Oppositional Defiant (irascible, covert, defiant, and manipulative behaviors); (e) Diffident (timid

and fearful behaviors); and (f) Avoidant (unusually withdrawn, aloof, and uncommunicative behaviors; McDermott, 1994). Additionally, the Attention-Deficit Hyperactivity, Solitary Aggressive (Provocative), Solitary Aggressive (Impulsive), and Oppositional Defiant syndrome combine to form an overall Overactivity adjustment scale. Similarly, the Diffident and Avoidant scores contribute to form an overall Underactivity adjustment scale (McDermott, 1994). The raw scores for the syndrome and scale scores are converted to *T* scores ($M = 50$, $SD = 10$) for interpretation. *T* scores less than 60 are considered to reflect *Adjusted behaviors*, *T* scores between 60 and 66 are considered *At Risk* for problems, and *T* scores equal or greater than 67 are considered *Maladjusted* behaviors (McDermott, 1994).

The norm sample for the ASCA included 1,400 students (700 males & 700 females) in grades kindergarten through twelfth grade (ages 5 through 17, with approximately 108 students at each one-year age and grade level; McDermott, 1994). The sample was stratified based on age, gender, race, ethnicity, parent education, family structure, national region, community size, and handicapping condition according to the 1988-1990 U.S. Census. Based on 29 raters employed as special education, remedial reading science and classroom teachers, and special education aides, who observed 71 students over a four week period, interrater reliability coefficient computed for core syndromes for *T* scores ranged from .55 to .87 (Watkins & Canivez, 1997). Additionally, short-term (30-day) test-retest evidence was reported as generally stable (Canivez, Perry, & Weller, 2001). Internal consistency (Cronbach's alpha) reported in the manual ranged from .70 to .86 for the core syndrome scores, and .92 and .82 for the Overactivity and Underactivity scale scores, respectively (McDermott et al., 1993).

McDermott (1994) conducted exploratory factor analyses on 129 ASCA items as well as confirmatory cluster analyses to determine and support the structural validity of the ASCA's syndromes with the standardization sample. For the exploratory factor analysis, 2 through 11 principal components were extracted using varimax, equamax, and promax rotations. The

components were evaluated according to five criteria: (a) the scree test, (b) five or more items with structure coefficients greater than or equal to .30, (c) internal consistency scores for unit-weighted salient items were reasonable, (d) the invariance of components across models, and (e) parsimony and theoretical support (McDermott, 1994). The eight-factor solution met the criteria, but 26 of the original items failed to acquire salient structure coefficients (.30 or higher) and were subsequently discarded (McDermott, 1994). Canivez (2004) replicated this factor structure and found two higher-order factors for 1,020 children randomly selected for rating by their classroom teacher. Additional support for the ASCA model was based on the 97 remaining items, after 32 failed to acquire salient loadings, using a unique cluster analytic process, which includes principal components analysis and oblique rotation (McDermott, 1994).

The cluster analytic process was also applied to an independent sample of 1,034 participants (548 males & 486 females, ages 5 through 17) gathered simultaneously with the standardization sample; however, this sample included oversampling of special education students, ethnic minority students, and other students with demographical information needed for reliability and validity studies (McDermott, 1994). The results of this cluster analysis produced similar findings with the exception of one item migrating from its hypothesized syndrome, but that item still produced a .49 loading on its hypothesized syndrome. Thus, the hypothesized factor structure was supported through exploratory factor analysis and cluster analyses.

As support for convergent validity, the ASCA's Overactivity syndrome score correlated highly with the Hyperactivity and Conduct Problems factors of the Conners Teacher Rating Scale (CTRS; Conners, 1989). In contrast, evidence for discriminant validity was based on negative and near-zero correlations between the ASCA's Underactivity scale and the CTRS' Hyperactive and Emotional Over-Indulgent scales. Likewise, negative and near-zero correlations were found between the ASCA's Overactivity scale and the CTRS' Anxious-Passive scale.

Canivez and Rains (2002) reported convergent and discriminant validity evidence for phenotype scores from the ASCA with the Preschool and Kindergarten Behavior Scales (PKBS; Merrell, 1994b). High correlations, and therefore evidence of convergent validity, were found between the ASCA Overactivity score and the PKBS Externalizing Problems scale ($r = .84$). Near zero correlations were found between the PKBS Externalizing Problems scale and the ASCA Underactivity score indicating evidence of discriminant validity ($r = -.06$). Smith (2002) provided additional convergent and divergent validity evidence for the ASCA with the SSRS-T scores, when examining possible links between social skills and problem behaviors as measured by the SSRS-T and the ASCA phenotype scores, respectively, using path analysis. Statistically significant positive relationships were found between the following: (a) Overactivity score on the ASCA and the Problem Behaviors score on the SSRS-T; and (b) the Underactivity score on the ASCA and the Social Skills score on the SSRS-T. Additionally, a statistically significant inverse correlation was found between the ASCA's Overactivity score and the SSRS-T Social Skills score. A statistically significant relationship was not found between the ASCA's Underactivity score and the SSRS-T Problem Behaviors score. Three path models were tested. Results indicated that Model 1 was a good fit for the data (social skills predicted problem behaviors; Comparative Fit Index [CFI] = 1.000, Standardized Root Mean Squared Residual [SRMR] = .030, Root Mean Squared Error of Approximation [RMSEA] = .000). Model 2, problem behaviors predicted social skills, was also a good fit (CFI = .985, SRMR = .034, RMSEA = .084). Model 3 (no link between social skills and problem behaviors) was not found to be a good fit (CFI = .785, SRMR = .103, RMSEA = .254). However, there were no statistically significant differences between goodness of fit indices for Models 1 and 2, indicating that although both influence each other, one variable was not found to be a better predictor of the other variable.

Sitotype scores. A new factor-based interpretation system for the ASCA has been developed that allows for the determination of the context in which maladaptive behaviors occur

(McDermott, Steinberg, & Angelo, 2005). Ratings on the ASCA reflect social situations occurring in the school environment (McDermott, 1994). Knowing that problem behaviors occur is an integral part of the assessment of maladaptive behaviors, but not enough to design an effective intervention. Knowing in what context the maladaptive behaviors occur allows for the development of specific interventions that are more likely to be effective (McDermott et al., 2005). McDermott et al. hypothesized that determining the situations in which problem behaviors occur may help improve the diagnostic utility of the ASCA and identified 29 specific contexts the ASCA includes. The ASCA's 29 specific contexts were reduced to 24 because five contexts were deemed not true situations, but instead descriptions of problem behaviors. Additionally, the items eliminated from the ASCA due to a lack of salient structure coefficients on syndromes were included in the item pool; therefore, 106 behaviors were analyzed in 24 contexts. The number of pathological items in each situation is added to determine the raw score for the situation, and raw scores are converted to normalized standard scores using area conversion (McDermott et al., 2005). Items are scored dichotomously in that the rater notes the presence (score = 1) or absence (score = 0) of the behavior.

Exploratory factor analysis of the situations described in the ASCA manual revealed three unique situtypes: Peer Context, Teacher Context, and Academic Context and was confirmed through confirmatory analyses (McDermott et al., 2005). The three situtype scores were moderately correlated, which are displayed in Table 2. Multiple discriminant function and multiple logistic regression analyses assessed the diagnostic utility of the situtypes using 150 youth already classified as Emotionally Disturbed and 360 already classified as Learning Disabled matched with non-diagnosed students all from the ASCA standardization sample ($N = 1,400$). High levels of classificatory accuracy for students with emotional disturbances were found along with moderate levels for students with learning disabilities (McDermott et al., 2005).

No other studies concerning the validity ASCA sitotype scores have been published; therefore, more evidence is needed to support the validity of these scores.

Table 2

Intercorrelations of the Adjustment Scales for Children and Adolescents Sitotype Scores

ASCA Sitotype	Peer Contexts	Academic Contexts
Academic Contexts	.65	
Teacher Contexts	.31	.50

Note. $N = 1,400$. Results obtained from ASCA standardization sample.

Social Skills Rating System. The Social Skills Rating System (SSRS; Gresham & Elliot, 1990) is a multirater assessment system used to determine the problems with social behaviors that affect teacher-peer relationships, peer acceptance, and academic competence. Parent, teacher, and student forms were developed for students in grades kindergarten through 12 with separate forms utilized for Elementary (grades kindergarten through 6) and Secondary (grades 7 through 12) students.

The purpose of SSRS is to assess social skills and problem or maladaptive behaviors. The types of social skills the SSRS measures are cooperation, assertion, responsibility, empathy, and self-control (Gresham & Elliot, 1990). Cooperation refers to helping others, sharing materials, and complying with rules and directions. Behaviors that fall under Assertion include initiating behaviors, such as asking others for information, introducing oneself, and responding to the actions of others. Behaviors that demonstrate the ability to communicate with adults and regard for property or work fall under Responsibility. Empathy refers to behaviors that show concern and respect for others' feelings and viewpoints. Self-control is reflective of behaviors that emerge in conflict situations, such as responding appropriately to teasing, and in nonconflict situations that require taking turns and compromising (Gresham & Elliot, 1990).

The authors of the SSRS define problem behaviors as behaviors that may interfere with the performance or acquisition of social skills, such as externalizing, internalizing, and hyperactive behaviors (Gresham & Elliot, 1990). Externalizing behaviors are inappropriate behaviors involving verbal or physical aggression toward others, poor control of temper, and arguing. Internalizing behaviors include anxiety, sadness, loneliness, and poor self-esteem. Hyperactivity refers to behaviors involving excessive movement, fidgeting, and impulsive reactions.

The SSRS was standardized using a national sample of 4,170 students' self-ratings (2,109 females and 2,061 males), along with 1,027 and 259 ratings from their parents and teachers, respectively. About half of the students sampled were elementary school students (grades 3-6), while the other half were secondary students (grades 7-12). According to the SSRS manual, teachers rated 17% of all students in the sample as "handicapped" (Gresham & Elliot, 1990, p. 99). Of those students rated as "handicapped," half were labeled as "Learning- Disabled" (Gresham & Elliot, 1990, p. 99). The next highest percentage included students labeled as "Mentally-Handicapped," followed by students labeled as "Behaviorally Disordered" and "Other" (Gresham & Elliot, 1990, p. 99). The standardization sample was also stratified by race, region, and community size to approximate the national distribution as defined by the 1983 United States' Census. Of the total sample, 73.2% were identified as White students, 18% were Black, 6.1% were Hispanic, and 2.7% were Other (Gresham & Elliot, 1990). However, the sample is slightly overrepresented with Blacks and Whites, and underrepresented with Hispanics and other groups (Gresham & Elliot, 1990). With regard to region of the United States, the largest percent of the sample came from the South, followed by the North Central region, the West, and the Northeast region, respectively. Additionally, the largest percent of the sample came from a suburban or small town, followed by a central city, and finally a rural area.

Exploratory factor analysis was used to determine the structure of the SSRS at various stages in its development. A national tryout of the SSRS was conducted in 1987 to finalize the forms and eliminate unreliable scores and redundant items (Gresham & Elliot, 1990). Principal components analysis with oblique rotation was used to determine the factor structure of each tryout form. The results for the teacher form indicated that three subscales composed the Social Skills factor. Following the finalization of the SSRS forms, 8 sets of principal components analysis was conducted with separate analyses for the Social Skills, Problem Behaviors, and Academic Competence domains with the standardization sample. For the elementary level teacher form, three social skills factors were produced: Cooperation, Assertion, and Self-Control with structure coefficients ranging from .51 to .84. Three Problem Behaviors subscales were produced: Externalizing, Internalizing, and Hyperactivity with structure coefficients ranging from .48 to .87. Only one Academic Competence factor was produced. For the purposes of this study, the SSRS Teacher Form, Elementary level was used.

The manual provides evidence for the internal consistency of the scores produced by the SSRS-T. For the scores on the teacher elementary form level social skills scales, the subscales and Total Scale scores resulted in alpha coefficients between .86 and .94 (Gresham & Elliot, 1990). When broken down by sex, the SSRS-T elementary level scores had similar alpha coefficients (Gresham & Elliot, 1990). As for test-retest reliability, the SSRS-T elementary level scores, correlations were between .75 and .88 for a four week span of time (Gresham & Elliot, 1990).

Flanagan, Alfonso, Primavera, Povall, and Higgins (1992) compared another maladaptive behavior scale, the Behavior Assessment System for Children (BASC; Reynolds, & Kamphaus, 1992), was compared to the SSRS Parent and Teacher forms to gather validity evidence. Participants in the study included all kindergarten students ($N = 53$; 26 males & 27 females ranging in ages from 4 years, 8 months to 5 years, 10 months) attending a parochial school in

New York City. Data were analyzed using a series of *t*-tests for independent groups for all of the composites and subscales of the BASC and SSRS, with the Bonferroni procedure applied to correct for family-wise Type I error. In addition, Pearson product-moment correlation coefficients between the scales and subscales of the BASC and SSRS were computed for parents and teachers separately. Parents tended to rate the sample of kindergarteners as having more problem behaviors than did teachers. However, Flanagan et al. concluded that the differences between parents and teachers scores were not clinically meaningful because all scale means on the BASC and SSRS for the sample were within one standard deviation of the respective standardization sample comparison group means. In regards to the social skills scales on both forms, a moderately high positive correlation was found between the BASC and SSRS parent forms evidencing convergent validity between the forms. On the other hand, a small and nonsignificant correlation was found between the BASC and SSRS teacher forms, suggesting that the underlying constructs may differ. Therefore, Flanagan et al. found evidence for the convergent validity of the parent forms of the BASC and SSRS, but not for the teacher forms of these instruments. The authors speculated that restriction of range may have attenuated the correlation between the measures because only two teachers rated the behaviors of all of the participants.

Data Analyses

Descriptive statistics. For the current study, assumptions of normality, multicollinearity, and linearity were all examined to ensure that the data were appropriate for structural equation modeling (SEM). In SEM, interval or ratio scales should be used because they have a sufficient range of score values to produce variance (Shumacker & Lomax, 1996). Interval level data was used in this study. When examining a distribution, normal values of skewness are zero and values surpassing -3 and +3 are considered extremely nonnormal. Kline (2005) noted that kurtosis values greater than 1 are potential problems while values greater than 2 are serious

problems. Multivariate normality is also an assumption of SEM. As suggested by Kline (2005), multivariate normality was examined by inspecting the distribution of scores. Multicollinearity was examined by inspecting the correlation matrix (Kline, 2005). Kline (2005) suggests that if any of the correlations between two variables exceeds .85, the variables may be redundant. Linearity between ASCA and SSRT-S variables was assessed using scatterplots. Most of the patterns did not reflect a non-linear pattern, but a non-linear pattern was found between the situtype scores of Academic and Teacher. In addition, some of the relationships between the variables depicted vertical or horizontal patterns of scores (i.e., Assertion & Self-Control; Cooperation & Self-Control), which are typically observed between categorical variables. These atypical patterns may be indicative of problems within the dataset (e.g., sampling issues, lack of variability of scores) and as a result, any significant findings may need to be viewed with caution.

SEM. Beyond descriptive statistics, SEM was the primary analysis used to test the hypotheses. Sample size can affect the results of SEM and different authors suggest various rules of thumb concerning the sample size. Ding, Velicer, and Harlow (1995) indicated numerous researchers agreed that the minimum satisfactory sample size is between 100 to 150 cases when conducting SEM. Kline (2005) reported that a sample size less than 100 is considered small, 100-200 is considered medium, and a sample greater than 200 is considered large. Shumacker and Lomax (1996) suggest 10 or 20 cases per variable as a rule of thumb, but further postulate that the greater the sample size the better. The sample size for the present study meets the minimum satisfactory sample size according to Kline's (2005) rule of thumb; however, a larger sample would be optimal.

SEM is a multivariate correlational method used to measure latent variables with maximal reliability and validity (Kline, 2005). The ultimate objective is to find a model that is statistically well fitting and is substantially meaningful. SEM is composed of independent and

dependent observed variables which can be either observed indicators (pictorially depicted as a square), or latent constructs (depicted as ovals) that cannot be directly measured but are instead inferred or hypothesized from the observed variables (Schumacker & Lomax, 1996). Sets of measured (observed) variables form a variance/covariance matrix used in testing a theoretical model. The sets of observed and latent variables result in the depiction of model that is tested again the observed data for goodness of fit.

SEM is composed of two components: measurement and structural models. Measurement models encompass the latent variables and their observed measures (Kline, 2005). For example, problem behavior is a latent construct measured by observed variables, such as scores on rating scales. In this case, the measurement model is used to identify the proposed structure of the observed variables (rating scores of the items) reflecting the problem behavior. The structural part of the model is composed of exogenous and endogenous variables, with the direct and indirect effects connecting them, and their disturbances. Exogenous variables are independent variables in all equations in which they appear, while endogenous variables are dependent variables in at least one equation. When depicted pictorially, each endogenous construct is the target of at least one one-headed arrow, while exogenous constructs are only targeted by two-headed arrows (Kline, 2005). The structural model specifies the direct and indirect relationships among the latent variable and describes the amount of unexplained and explained variance (Kline, 2005).

Structural equation models can be recursive or nonrecursive. A structural model is recursive when all the structural relationships are unidirectional and no two latent variables are reciprocally related (Kline, 2005). When the model is drawn, no feedback loops are drawn whereby a latent variable feeds back upon itself (Kline, 2005). On the other hand, nonrecursive structural models include a reciprocal or bidirectional relationship indicating a feedback. Models

with correlated disturbances are also considered nonrecursive. The models presented in this study are recursive.

Two different approaches in testing these models exist: a two-step or a four-step approach (Kline, 2005). With the two-step approach, the measurement and structural models are tested separately. The first step is the validation of the measurement model, which is done through confirmatory factor analysis. The second step is the fitting of the structural model with latent variables. With the four-step approach, the researcher must first specify four nested models and each factor must have four indicators (Kline, 2005). Second, the least restrictive model with the best fit is chosen as the measurement model. Third, the entire model is tested with one of the unanalyzed associations respecified as a direct or reciprocal effect and some of the factors changed to endogenous ones (Kline, 2005). Fourth, the researcher's originally hypothesized model is tested. When deciding between the two- and four-step models, Kline (2005) stated that both are superior to a one-step approach, but neither is the "gold standard" (p. 218) because none exists. The advantage of the two-step approach includes simplicity (Kline, 2005). The two-step approach was used in this study and all data analyses were completed with EQS 6.1 (Bentler, 2005), a structural equation modeling software program.

Measurement model specification. Model specification, the initial step in confirmatory factor analysis (CFA), involves the specification of the number of underlying latent factors as well as which measured observed variables make up which factors. Three measurement models were specified. The theoretical definition used for Model 1 (ASCA phenotype) was based on problem behaviors and the two overarching categories in which those problem behaviors fall. The ASCA phenotype model was based on the theory specified in the ASCA manual and is depicted in Figure 3. According to McDermott (1994), the results of exploratory and confirmatory cluster analyses with the standardization sample found eight first-order factors (2 are not appropriate for this study's sample and are not depicted) and two second-order

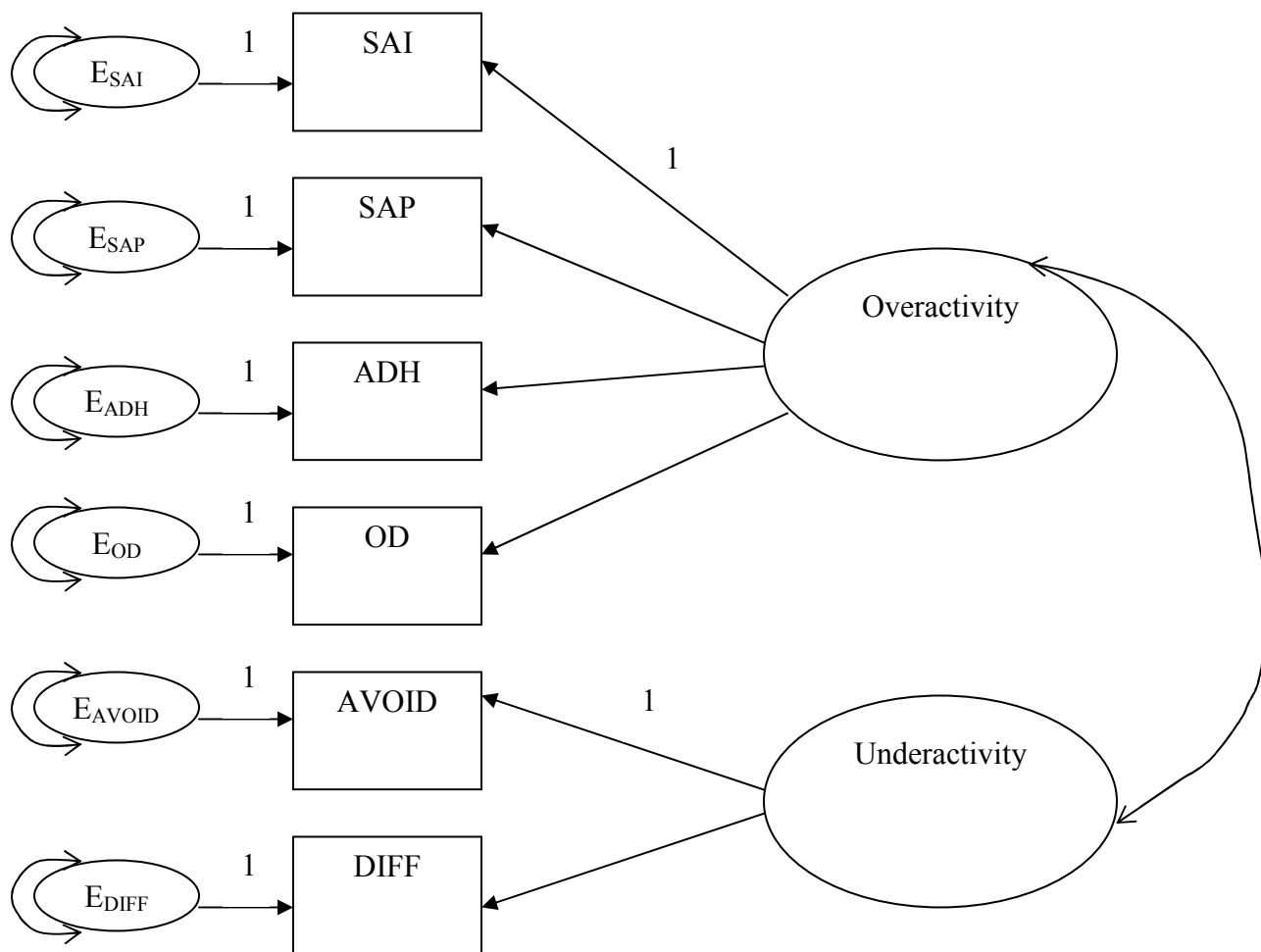


Figure 3. Model 1—ASCA Phenotype: Measurement) model of the relationship between problem behaviors and first-order factors using the Adjustment Scales for Children and Adolescents' Overactivity and Underactivity scores. SAI = Solitary Aggression Impulsive; SAP = Solitary Aggressive Provocative; ADH = Attention Deficit/Hyperactivity; OD = Oppositional Defiant; AVOID = Avoidant; DIFF = Diffident.

phenotypic factors. But for the purposes of this study, a first-order model, not a second-order model, was tested in which the observed variables were the participants' scores on the Attention-Deficit Hyperactive (ADH), Solitary Aggressive (Provocative; SAP), Solitary Aggressive (Impulsive; SAI), Oppositional Defiant (OD), Diffident (D), and Avoidant (A) scales. The Lethargic and Delinquent scores were not included because they were not appropriate for the sample. The latent variables were the ASCA phenotype scale scores, Overactivity (O) and Underactivity (U). In essence, scores at item level were not used, but subscale scores were used in order to (a) strengthen score reliability and (b) maximize power using a small sample size of 185 (Kline, 2005).

The theoretical definition guiding Model 2 (ASCA situtype) was based on the context in which problem behaviors occur (McDermott et al., 2005). In this ACSA situtype model, depicted in Figure 4, the observed variables were the participants' scores on the ASCA items for the 24 situations. The latent variables were the ASCA situtype scores (Peer Context, Teacher Context, and Academic Context). See Table 3 for a complete list of the observed variables included in Figure 4. The third measurement model in this study involved the relationship between specific types of social skills and an overarching social skills factor, using scores from the SSRS-T. The participants' scores on the items were the observed variables, which made up the latent variable Cooperation, Assertion, and Self-Control. Model 3 (Social Skills) is depicted in Figure 5 and was based on the theoretical definition of the SSRS-T factor structure, as outlined in the SSRS manual (Gresham & Elliot, 1990).

Model identification. A model is identified if a unique solution exists for each parameter in the model (Kline, 2005). Three levels of model identification are possible, which are determined by the ratio of the number of observations to the number of parameters. The number of observations is the number of variances and covariances among the observed variables (Kline, 2005). The equation used to calculate the number of observations is $[\nu(\nu + 1)]/2$, where ν refers

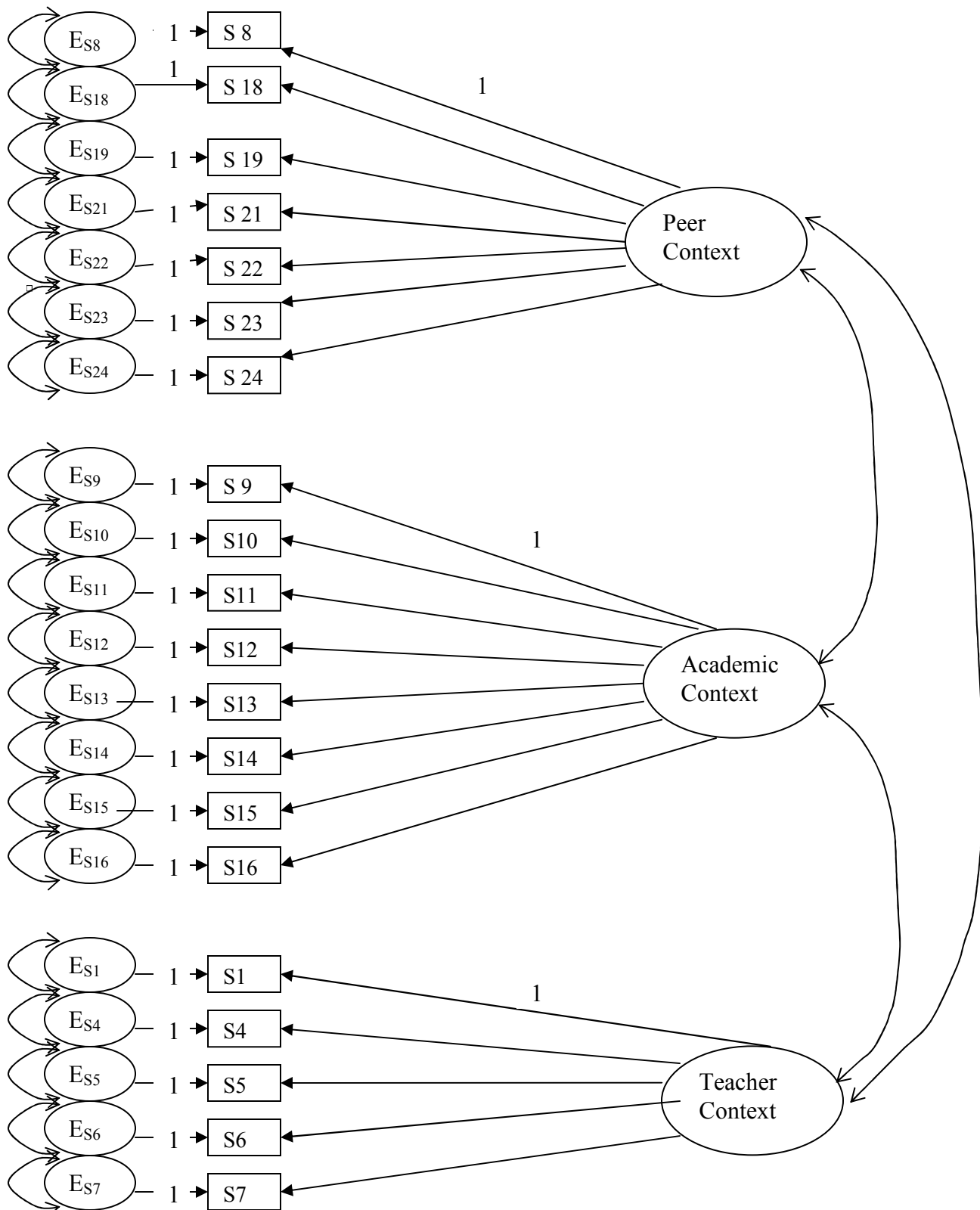


Figure 4. Model 2- ASCA Situtype: Measurement model of the context in which problem behaviors occur using the ASCA situtype scores. S = Situations.

Table 3

Problem Behavior Situations Used to Compute the ASCA Situtype Scores in Model 2

Context	Situation
Peer Context	8- Maintaining Friends/Companions
	18- Taking Part in Team Games
	19- General Manner with Teacher
	21- Greeting Teacher
	22- Valuing Teacher Attention
	23- Seeking Teacher Help
	24- Helping Teacher
Academic Context	9- Working by Self
	10- Paying Attention in Class
	11- Sitting at Desk
	12- Working with Hands
	13- Caring for Books
	14- Coping with New Learning Tasks
	15- Telling the Truth
Teacher Context	16- Reaction to Consequences
	1- Playing Fairly
	4- Standing in Line
	5- Behaving in Classroom
	6- Respecting Other's Belongings
	7- Standing One's Own Ground

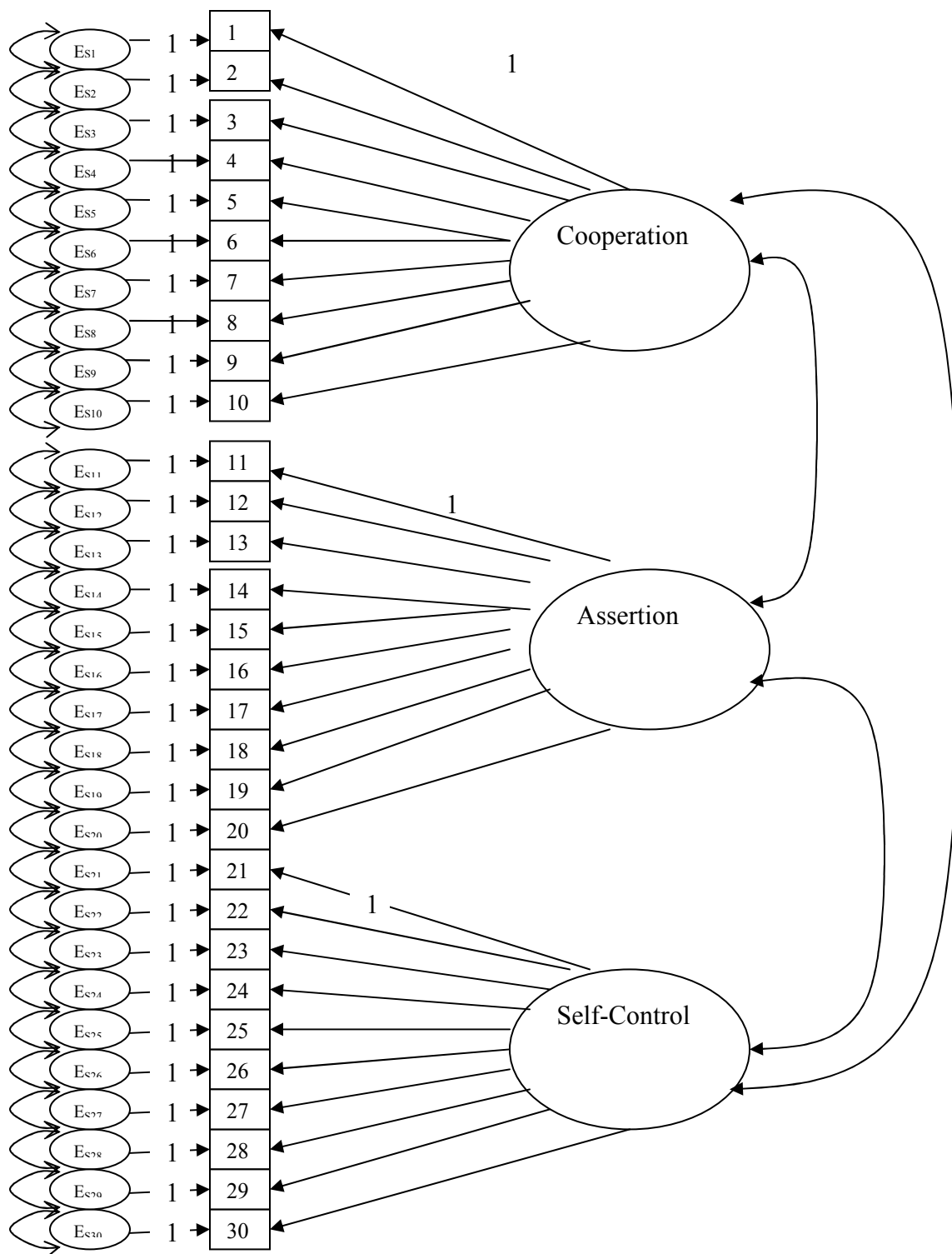


Figure 5. Model 3—Social Skills: Specification of the measurement model concerning the relationship among specific types of social skills using the SSRS-T scores.

to the number of observed variables (Kline, 2005).

A model is considered underidentified if one or more parameters are not uniquely determined (Kline, 2005). For the models specified in this study, the number of parameters is greater than the number of observations. Just-identified models are models in which all of the parameters may be uniquely determined. The number of parameters equals the number of observations. When there is more than one way of estimating a parameter or parameters, the model is overidentified. In this case, the number of parameters is less than the number of observations. If a model is either just identified or overidentified, then it is considered identified. If the model is underidentified, the parameter estimates are not to be trusted. However, an underidentified model may become identified if additional constraints are imposed. Two types of identification rules for measurement models exist. A measurement model must meet two necessary but insufficient rules to be identified. The number of parameters must be less than or equal to the number of observations and every factor must have a scale (Kline, 2005). However, even models that meet these two requirements may be nonidentified; therefore, a sufficient condition states that if a model with two or more factors has at least two indicators per factor, then the model is identified (Kline, 2005). According to the sufficient condition, all the measurement models are identified.

Measurement model estimation. Maximum likelihood (ML; which assumes multivariate normality) was used as an estimation procedure. The estimates produced from ML are based on maximizing the probability that the observed covariances are drawn from a population assumed to be the same as that reflected in the coefficient estimates. ML estimation selects estimates that give the greatest chance of reproducing the observed data. ML estimation methods assume multivariate normality of the observed variables (Kline, 2005).

Measurement model evaluation. Two methods were employed to evaluate the model fit. First, the parameters were inspected to determine if they fell in the expected direction and were

statistically different from zero. In addition, the residual matrix, which is the differences between the observed covariance matrix and the model implied covariance matrix, was inspected. Good model fit is indicated by small residual values. On the other hand, large values overall indicate serious general model misspecification, while large values for a single variable indicate misspecification for that variable only (Shumacker & Lomax, 1996). Large standardized residuals (larger than 1.96 or 2.58) indicate that a particular covariance is not well explained by the model (Shumacker & Lomax, 1996).

Goodness-of-fit statistics measure the degree to which a particular model fits the population. The Normed Fit Index (NFI) indicates the proportion in the improvement of the overall fit of the hypothesized model to the null model. Similarly, the comparative fit index (CFI) measures the relative improvement in fit of the hypothesized model with a baseline model, but is less affected by sample size. The baseline model, also called the independence model and null model, assumes zero population covariances among the model's observed variables (Kline, 2005). NFI and CFI values above .90 indicate good fit (Kline, 2005). The Satorra-Bentler chi-square statistic which is applied when the data is non-normal was also used (Kline, 2005). The Satorra-Bentler statistic adjusts the value of the chi-square to the degree of kurtosis (Kline, 2005).

The standardized root mean square residual (SRMR) was also inspected. The SRMR represents the average residual value derived from the fitting of the variance-covariance matrix for the hypothesized model to the variance-covariance matrix of the sample data (Byrne, 1998). However, these residuals can be hard to interpret because they are relative to the sizes of the observed variances and covariances (Byrne, 1998) and the standardized version is used to aid interpretation. The SRMSR ranges from 0 to 1.00 and a small value, .05 or less, represents a well-fitting model (Kline, 2005).

Structural model specification. Structural model specification refers to the initial theoretical model the researcher formulates, which follows a review of the relevant research literature. These equations define the model's parameters, which correspond to presumed relations among observed and latent variables that the computer eventually estimates with sample data (Kline, 2005). The researcher defines each variable as fixed, free, or constrained. A free parameter is an unknown parameter, and therefore, one that must be estimated. A fixed parameter is not free, but rather fixed to a specified value between 0 and 1. A constrained parameter is a parameter that is unknown, but is constrained to equal another parameter in the model.

Error and disturbance terms are explicitly modeled in the structural model. An error term is the measurement error associated with a given indicator. Residual error terms, or disturbances, reflect the unexplained variances in the latent endogenous variables due to all unmeasured causes (Kline, 2005). A correlated error term refers to the situation in which the residual of one indicator is associated with the residual of another indicator.

The first structural model is presented in Figure 1 (see page 24) and includes the ASCA phenotype syndrome scores as latent exogenous variables and the SSRS-T Social Skills score as a latent endogenous variable. The model is recursive. In the second structural model, which is presented in Figure 2 (see page 25), the ASCA situtype scores are the latent exogenous variables and the SSRS-T Social Skills score is the latent endogenous variable. Like the first structural model, the second model is recursive.

Structural model identification. A model is identified if it is theoretically possible for the computer to derive a unique estimate of every model parameter (Kline, 2005). Identification asks whether unique values can be found for the parameters to be estimated in the theoretical model. Different types of structural equation models must meet certain requirements to be identified. If a

model fails to meet requirements for its identification, attempts to estimate it may not be successful. Therefore, model identification is one of the most important steps in SEM.

Determining whether a model is identified requires determining whether the (a) measurement model and (b) structural model are identified. According to the initial identification rules for measurement models outlined by Kline (2005), the measurement model in this study is identified. The structural model in this study meets the sufficient identification condition, which is that the model is recursive. Because the measurement and structural models are identified, the entire model is initially identified (Kline, 2005).

Structural model fit and evaluation. Model fit is used to determine how adequately the model accounts for the data (Kline, 2005). Testing fit involves interpreting model fit or comparing fit indices for alternative or nested models. Strictly confirmatory model testing occurs when a model is tested with the goodness-fit-indices to determine if the pattern of variances and covariances in the data is consistent with the structural path specified by the researcher (Kline, 2005). The model can be tested in comparison to alternative models to determine which has the best fit. The problem with this approach is that a limited number of models are represented in the literature. The third type of model testing is model development for which a model is tested using SEM procedures, found to be deficient, and an alternate model is then tested based on changes suggested by the SEM modification indices. This is the most common approach found in the literature (Kline, 2005). The model comparison approach was applied in this study using the two alternate models produced by sitotypes and phenotype scores from the ASCA. The same criteria (CFI, SRMR) used to test the measurement models were used to test the structural models.

Results

Preliminary Analyses

The original data set contained teachers' ratings of 200 students randomly selected from a pool of 342 students eligible for the study. From the 200 protocols, 15 of them could not be used because of incomplete information, leaving 185 usable ones. Assumptions of structural equation modeling were examined. Skewness of the ASCA phenotype scores ranged from .53 to 3.98, with only the SAI scores above 3. Kurtosis statistics ranged from .88 to 13.96, with two variables (OD and SAI) greater than 2 and the rest less than 1. For the ASCA situtype scores, two variables (Contexts 2 and 24) had skew statistics greater than 3 (skew range = .67 – 4.71); while 15 variables had kurtosis statistics greater than 2 (Contexts 2, 4, 7, 10, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, and 24; kurtosis range = (-1.34 – 21.26). Four variables had kurtosis statistics greater than 1 (Contexts 1, 3, 8, and 12). The kurtosis of the ASCA situtype scores ranged from -1.34 to 21.26. Analyses of the skewness and kurtosis of the SSRS-T scores revealed no variables with skew greater than 3 (range = -1.51 - .17), and three variables had kurtosis values greater than 1 (Cooperation 9, Cooperation 18, and Cooperation 22; range -1.48 -1.33). When linearity was examined using scatterplots, atypical patterns were observed which are indicative of problems within the data set. Descriptive statistics (mean, standard deviation, score reliability, and correlations) were run on the data for the major variables at item and scale level. This information is summarized for the ACA original phenotype scores, the ASCA situtype scores, and the SSRS-T in Tables 4, 6, and 8.

Descriptive summary of the ASCA phenotype scores. Table 4 provides a summary of the descriptive statistics, including means, standard deviations, correlations and reliability estimates, of the ASCA phenotype scores along with the reliability estimates reported in the ASCA manual (McDermott, 1994). Most of the correlations between the observed variables were statistically significant at the .05 level. The four observed variables that comprised the Overactivity factor all

Table 4

Summary of Descriptive Statistics for ASCA Phenotype Scores

Subscale	1	2	3	4	5	6
1. Attention Deficit Hyperactivity						
2. Oppositional Defiant	.47*					
3. Solitary Aggressive (Provocative)	.57*	.56*				
4. Solitary Aggressive (Impulsive)	.26*	.20*	.32*			
5. Diffident	-.09	-.18*	-.19*	-.12		
6. Avoidant	.07	-.05	-.05	.00	.42*	
<i>M</i>	48.18	46.32	49.20	48.19	48.92	48.14
<i>SD</i>	9.72	7.70	8.90	4.99	9.30	8.92
α	.77	.79	.63	-- ^a	.66	.69
α standardization sample	.86	.78	.70	.76	.80	.71

Note. $N = 185$. ASCA = Adjustment Scales for Children and Adolescents; variables 1 – 4 make up the Overactivity factor and variables 5 and 6 make up the Underactivity factor. α = alpha coefficient. ^a Score reliability estimate could not be computed due to constriction of range.

* $p < .05$.

correlated greater than .25, but did not exceed .60. The two observed variables that comprised the Underactivity factor also positively correlated with each other ($r > .40$). A summary of the descriptive statistics (means, standard deviations, correlations, and score reliability) for the factor scores of Overactivity and Underactivity is in Table 5. Correlations between the Overactivity and Underactivity variables were negligible, showing little relationship between the factors.

Table 5

Intercorrelations and Reliability Estimates of the ASCA Phenotype Composite Adjustment Scores

Subscale	Overactivity	Underactivity
Underactivity	-.06	
<i>M</i>	47.95	48.58
<i>SD</i>	9.20	9.39
<i>α</i>	.73	.59
<i>α</i> standardization sample	.92	.82

Note. $N = 185$. ASCA = Adjustment Scales for Children and Adolescents; α = alpha coefficient.

Score reliability estimates, reported in Table 4, were obtained for five of the six ASCA phenotype scales and ranged from .63 to .79 ($Mdn = .69$), with only half comparable to those obtained in the standardization sample. Attention Deficit, SAP, SAI, Diffident, and Avoidant had lower score reliability estimates than those reported for the standardization sample (McDermott et al., 1993). Score reliability estimates could not be computed for the SAI variable due to several sampling issues (small number [$N = 19$] of teachers rated the students and the small number of students reporting having problems) as well as the binary nature of the scales designed for scoring pathology. This scoring method limits the variability in raw scores (Canivez, 2006). Examination of scores for the SAI revealed that 99% of the scores were zero while less than 1% had scores of one (one indicates the presence of a problem behavior).

Descriptive statistics of ASCA situtype scores. Table 6 provides a summary of the descriptive statistics (means, standard deviations, and intercorrelations) for the ASCA situtype

Table 6

Means, Standard Deviations, and Intercorrelations of the Situation Items from the Adjustment Scales for Children and Adolescents

Sit	8	18	19	21	22	23	24	9	10	11	12	13	14	15	16	1	4	5	6	7
8																				
18	.55																			
19	.53	.66																		
21	.56	.64	.67																	
22	.26	.36	.39	.19																
23	.37	.50	.55	.41	.32															
24	.45	.39	.39	.42	.30	.20														
9	.33	.34	.44	.28	.20	.62	.14													
10	.56	.64	.57	.48	.25	.54	.37	.51												
11	.22	.20	.27	.15	.31	.39	.16	.38	.33											
12	.25	.33	.33	.24	.31	.39	.20	.29	.35	.65										
13	.23	.42	.38	.22	.29	.51	.18	.42	.51	.41	.41									
14	.11	.32	.41	.22	.33	.38	.24	.19	.37	.47	.69	.42								
15	.26	.33	.41	.21	.27	.44	.14	.37	.42	.52	.44	.56	.49							
16	.34	.28	.32	.36	.31	.29	.31	.20	.26	.34	.39	.21	.38	.31						
1	-.04	.05	-.01	-.04	.00	.13	-.03	.08	.02	.15	.20	.11	.12	.20	.03					
4	.19	-.01	.13	.02	.17	.12	.09	.28	.14	.29	.25	.27	.27	.35	.10	.19				
5	.35	.26	.28	.21	.29	.32	.23	.19	.34	.37	.34	.22	.42	.22	.19	.35	.44			
6	.28	.24	.29	.26	.26	.20	.22	.09	.21	.20	.21	.13	.25	.33	.15	.18	.26	.45		
7	.37	-.03	.04	-.08	.23	.04	.07	.33	-.03	.15	.22	.03	.18	.19	-.03	.37	.42	.49	.27	
<i>M</i>	10.35	10.12	9.15	9.15	10.05	10.66	9.50	9.65	9.09	9.47	9.45	10.04	9.39	9.22	9.95	10.17	9.26	9.39	9.19	9.40
<i>SD</i>	3.10	3.19	2.59	2.77	2.57	3.18	2.40	2.81	2.50	2.60	2.53	2.62	3.02	2.77	2.40	2.94	2.82	2.67	2.70	2.64

Note. $N = 185$. Sit = Situations. Situations 8, 18, 19, 21, 22, 23, & 24 comprise the Peer Context; Situations 9, 10, 11, 12, 13, 14, 15, & 16 comprise the Academic Context; Situations 1, 4, 5, 6, & 7 comprise the Teacher Context. See Table 4 in Method section for a description of situations.

scores. Intercorrelations between variables within each situtype ranged from .18 to .69. The correlations between the variables of the Peer and Academic Contexts (.00 to .29), and the Teacher and Academic Contexts (.02 to .37) were low to modest. Table 7 summarizes the intercorrelations between the ASCA situtype factors as well as means, standard deviations and score reliability estimates in comparison to the ones from the standardization sample (McDermott et al., 2005). Teacher Context correlated with both the other contexts sharing approximately 30% of the variance with Peer and less than 10% with Academic Context. Academic, and Peer Contexts shared approximately 4% of the variance. Reliability estimates of

Table 7

Intercorrelations and Score Reliability Estimates of Factors from the ASCA Situtypes

Subscale	Peer Context	Teacher Context	Academic Context
Peer Context			
Teacher Context	.62*		
Academic Context	.21*	.32*	
<i>M</i>	49.20	47.77	48.24
<i>SD</i>	9.72	8.89	9.24
α	.84	.72	.84
α Standardization sample	.82	.76	.88

Note. N = 185. ASCA = Adjustment Scales for Children and Adolescents; α = alpha coefficient.
* $p < .05$.

the context scores were all above .70 and were equivalent to the alpha coefficients reported by McDermott et al. (2005). Frequencies of the items were examined and revealed that the majority of items (95%) were scored zero, meaning few behavior problems were reported. Similar to the ASCA phenotype scores, there was little variability in the data, indicating a constriction of range.

Descriptive statistics of SSRS-T. Table 8 summarizes the descriptive statistics (means, standard deviations, and correlations) for the SSRS-T variables that make up Cooperation,

Table 8

Means, Standard Deviations, and Intercorrelations of the Social Skills Rating Scale-Teacher Form Item Scores

Subscale	Item	1	6	9	10	12	16	18	22	27	29	2	3	5	8	11	17	19	24	25	30
Cooperation	1																				
	6	.32																			
	9	.20	.14																		
	10	.34	.35	.33																	
	12	.48	.35	.18	.38																
	16	.32	.31	.59	.41	.31															
	18	.30	.39	.15	.33	.29	.29														
	22	.53	.35	.38	.39	.43	.47	.44													
	27	.24	.18	.56	.22	.18	.47	.25	.50												
Assertion	29	.32	.27	.67	.34	.28	.59	.26	.48	.69											
	2	.10	.51	.03	.19	.18	.16	.21	.12	.01	.08										
	3	.01	.30	.13	.16	-.04	.13	.15	.03	.10	.09	.38									
	5	.44	.49	.27	.45	.52	.29	.51	.43	.29	.36	.25	.08								
	8	.39	.33	.50	.28	.22	.49	.36	.54	.48	.59	.13	.13	.39							
	11	.41	.39	.22	.42	.51	.28	.42	.42	.27	.28	.14	.08	.55	.28						
	17	-.03	.33	.14	.15	.02	.19	.25	.04	.00	.10	.37	.59	.09	.13	.07					
	19	.31	.56	.17	.40	.33	.31	.48	.48	.24	.24	.40	.19	.40	.40	.39	.21				
	24	.25	.41	.28	.45	.35	.34	.26	.43	.26	.31	.33	.24	.33	.38	.34	.22	.50			
	25	.46	.33	.09	.31	.55	.21	.47	.45	.23	.20	.18	.01	.57	.26	.62	.06	.39	.31		
	30	.50	.39	.24	.45	.43	.41	.36	.53	.30	.39	.12	.02	.45	.44	.45	.01	.48	.42	.50	
Self-Control	4	.37	.33	.10	.26	.39	.11	.43	.33	.16	.18	.23	.11	.60	.16	.43	.08	.31	.21	.51	.33
	7	.31	.52	.30	.54	.26	.32	.36	.40	.28	.31	.41	.30	.41	.48	.35	.19	.59	.51	.23	.35
	13	.40	.28	.25	.46	.63	.25	.40	.44	.31	.36	.09	-.04	.59	.27	.64	-.07	.36	.25	.62	.44
	14	.26	.41	.18	.50	.24	.33	.30	.34	.15	.20	.35	.32	.29	.29	.26	.38	.41	.39	.22	.27
	15	.37	.27	.58	.38	.28	.51	.35	.53	.61	.67	.11	.10	.41	.64	.42	.08	.30	.33	.33	.48
	20	.33	.23	.49	.29	.25	.54	.38	.57	.50	.61	.10	.07	.33	.52	.32	.06	.33	.34	.24	.41
	21	.28	.24	.57	.26	.27	.65	.27	.59	.66	.61	.14	.09	.25	.59	.20	.10	.35	.38	.20	.31
	23	.26	.56	.22	.35	.36	.35	.36	.41	.20	.26	.50	.15	.40	.40	.32	.22	.58	.62	.29	.44
	26	.28	.17	.57	.26	.25	.46	.24	.41	.60	.60	.12	.06	.36	.47	.36	.06	.21	.20	.30	.34
	28	.38	.26	.46	.31	.36	.60	.37	.58	.61	.73	.13	.08	.30	.57	.35	.05	.40	.40	.30	.49
	<i>M</i>	1.68	1.33	1.67	1.66	1.57	1.73	1.45	1.67	1.58	1.71	.95	.86	1.36	1.62	1.29	.81	1.26	1.63	1.39	1.63
<i>SD</i>	.49	.60	.55	.50	.54	.47	.53	.47	.60	.50	.66	.65	.55	.54	.53	.57	.56	.53	.54	.51	

Table 8 (Continued)

Subscale Item	4	7	13	14	15	20	21	23	26	28
Self-Control	4									
	7	.23								
	13	.47	.32							
	14	.16	.40	.24						
	15	.23	.41	.45	.18					
	20	.20	.33	.30	.21	.52				
	21	.19	.32	.26	.28	.52	.61			
	23	.29	.56	.27	.41	.29	.32	.31		
	26	.27	.25	.37	.04	.65	.51	.46	.21	
	28	.27	.36	.41	.23	.62	.73	.70	.36	.56
	<i>M</i>	1.13	1.40	1.47	1.61	1.53	1.75	1.76	1.40	1.30
	<i>SD</i>	.55	.56	.58	.52	.56	.44	.44	.63	.62
										.47

Note. $N = 185$.

Assertion, and Self-Control. Intercorrelations between SSRS-T variables within each factor were low to moderate as well as between the variables of Cooperation and Self-Control, and between Assertion and Self-Control. Low intercorrelations were also found between the Cooperation and Assertion variables. Table 9 provides a summary of means, standard deviations, correlations, and score reliability for the SSRS-T factors. Correlations between Cooperation, Assertion, and Self-Control ranged between .42 and .53. All score reliabilities for the factors were above .80, .06 to .07 points lower than the alpha coefficients for the SSRS-T scores reported in the SSRS-T manual (Gresham & Elliott, 1990).

Table 9

Reliability Estimates and Intercorrelations for the SSRS-T Subscale Scores

Subscales	Cooperation	Assertion	Self-Control
Cooperation			
Assertion	.42*		
Self-Control	.51*	.53*	
<i>M</i>	50.76	49.95	49.03
<i>SD</i>	11.77	11.40	10.12
α	.85	.80	.84
α standardization sample	.92	.86	.91

Note. $N = 185$. SSRS-T = Social Skills Rating System- Teacher Form; α = alpha coefficient.

* $p < .05$.

Structural Equation Modeling

CFA, using EQS v. 6.1, was conducted on the covariance matrix of raw data or standardized scores to test the adequacy of the three measurement models prior to running the proposed structural models: ASCA two-factor phenotype model, ASCA three-factor situtype model, and SSRS-T three-factor model. Maximum likelihood (ML) robust extraction method was used, employing Satorra Bentler robust method because the data were found to be non-normal. All of the models tested had at least one parameter per factor fixed to one and all the variances and covariances were estimated. Criteria to assess goodness of fit were summarized in the method section: (a) NFI equal or greater than .95 (b) CFI equal or greater than .95, and (c) RMSEA less than .05. Parameter estimates were examined for statistical significance at the .01 probability level.

ASCA two-factor phenotype measurement model. CFA was conducted on the ASCA phenotype *T* scores. Table 10 provides a summary of the goodness of fit indices. The initial

Table 10

Goodness of Fit Indices for the Two-Factor ASCA Model, Maximum Likelihood (Robust)

Model	<i>df</i>	χ^2 (s-b)	NFI	CFI	RMSEA	RMSEA 90% CI
Null	16	649626.72				
2-Factor ASCA	9	6.17	1.00	1.00	.00	.00, .06

Note. *N* = 185. ASCA = Adjustment Scales for Children and Adolescents; S-B = Satorra Bentler chi square for measurement model. NFI = Normed Fit Index. CFI = Confirmatory Fit Index. RMSEA = Root Mean Square Error of Approximation.

CFA analysis was not viable to interpret because the error variance for the Diffident variable was negative; the output was considered acceptable to interpret when the error variance was constrained to .01 (no other solution worked; i.e., setting the Diffident variable to one). A perfect fit was indicated by the goodness of fit indices (i.e., CFI = 1.00, RMSEA = .00). However, these

findings were viewed with caution, as the negative variance for the Diffident variable signaled a potential problem in the data set. An examination of the scores for the Diffident variable revealed (a) there was a perfect fit, with no error, between the model and the data and (b) that only 8% of the Diffident scores were 1, indicative of a problem behavior, with the rest (92%) rated as zero (no problem behavior). As noted earlier, an examination of the frequency distribution of scores for the ASCA phenotype items showed that the majority of items were scored zero and as a result reflect a constant value with very little variability in the data. The perfect fit did not seem to reflect the actual reality as much as the presence of constant values and lack of variability in the data set. Thus, the ASCA phenotype data were not considered to be trustworthy to support the presence or absence of the two-factor ASCA phenotype model. Table 11 provides a summary of the standardized pattern coefficients for the estimated parameters for the two-factor ASCA model. The correlation between the two factors was $-.22$.

Table 11

Standardized Pattern Coefficients for the Estimated Parameters for the Two-Factor ASCA Model, Maximum Likelihood Robust

Variable	Overactivity	Underactivity
Attention	.68*	
Oppositional	.66*	
Solitary Aggressive (Provocative)	.84*	
Solitary Aggressive (Impulsive)	.37*	
Diffident		1.00*
Avoidant		.42*

Note. $N = 185$. ASCA = Adjustment Scales for Children and Adolescents.

* $p < .01$.

ASCA three-factor situtype measurement model. CFA analyses of the three-factor ASCA situtype model was computed on the scaled scores and based on norms derived from the standardization sample. The goodness of fit criteria indicated the fit between the model and the data did not meet the established guidelines (CFI = .75, RMSEA = .08). Table 12 provides a summary of the goodness of fit findings of the ASCA three-factor situtype model. These finding were not in keeping with previous CFA findings of the three-factor ASCA situtype model (i.e., CFI = .901, RMSEA = .067; McDermott et al., 2005). Table 13 provides a summary of the standardized pattern coefficients for the indicators for each factor. All unstandardized parameter estimates, variances, and covariances were statistically significant at the .01 level. Correlations between factors ranged from .33 (Peer Context and Teacher Context) to -.69 (Academic Context and Teacher Context), with the correlation between Academic Context and Peer Context in between the two ranges (.53).

Table 12

Goodness of Fit Indices for the Three-Factor ASCA Situtype Model, ML Robust

Model	<i>df</i>	χ^2 (s-b)	NFI	CFI	RMSEA	RMSEA 90% CI
Null	190	866.514				
3-factor	167	338.97	.71	.75	.08	.06, .09

Note. $N = 185$. ASCA = Adjustment Scales for Children and Adolescents; S-B = Satorra Bentler chi square for measurement model. NFI = Normed Fit Index. CFI = Confirmatory Fit Index. RMSEA = Root Mean Square Error of Approximation. ML = Maximum Likelihood.

Table 13

Three-Factor ASCA Standardized Pattern Coefficients for Estimated Parameters, ML Robust

Situation	Teacher Context	Academic Context	Peer Context
S1	.42*		
S4	.56*		
S5	.83*		
S6	.52*		
S7	.60*		
S9		.53*	
S10		.64*	
S11		.69*	
S12		.74*	
S13		.65*	
S14		.70*	
S15		.69*	
S16		.47*	
S8			.67*
S18			.80*
S19			.84*
S21			.75*
S22			.44*
S23			.64*
S24			.50

Note. N = 185. ASCA = Adjustment Scales for Children and Adolescents. S = situations.

* $p < .05$.

Three factor SSRS-T measurement model. The 30-item SSRS-T form contains three factors: Cooperation, Assertion, and Self-Control. The covariance matrix was based on the raw scores from the SSRS-T items. CFA findings indicated a poor fit to the data (CFI = .62, RMSEA = .13) and the summary of goodness of fit indices are reported in Table 14. These findings did not support the previous EFA conducted with SSRS-T scores (Gresham & Elliott, 1990). Intercorrelations between the factors were extremely high (Cooperation and Assertion = .87, Self-Control and Cooperation = 1.00, Self-Control and Assertion = .86), an indication that all three factors might not be viable in this data set. These correlations were much higher than the correlations reported in the manual which ranged from .46 to .64 (Gresham & Elliott, 1990). Table 15 summarizes the standardized pattern coefficients for the parameter estimates on each SSRS-T factor. All unstandardized parameter estimates, variances, and covariances were statistically significant at the .01 level.

Table 14

Goodness of Fit Indices for 3-Factor SSRS-T, ML Robust

3 Factor SSRS-T Model	<i>df</i>	χ^2 (s-b)	NFI	CFI	RMSEA	RMSEA 90% CI
Null Model	435	3560.74				
Model	402	1585.92	.56	.62	.13	.12, .13

Note. $N = 185$. SSRS-T = Social Skills Rating System – Teacher Form; s-b = Satorra Bentler chi square for measurement model. NFI = Normed Fit Index. CFI = Confirmatory Fit Index. RMSEA = Root Mean Square Error of Approximation. ML = Maximum Likelihood.

Table 15

Standardized Pattern Coefficients for the Estimated Parameters for the Three-Factor SSRS-T Model, Maximum Likelihood Robust

Variable	Cooperation	Assertion	Self-Control
Coop 1	.52*		
Coop 6	.47*		
Coop 9	.62*		
Coop 10	.53*		
Coop 12	.50*		
Coop 16	.69*		
Coop 18	.51*		
Coop 22	.74*		
Coop 27	.69*		
Coop 29	.76*		
Asser 2		.33*	
Asser 3		.20*	
Asser 5		.68*	
Asser 8		.65*	
Asser 11		.65*	
Asser 17		.20*	
Asser 19		.65*	
Asser 24		.60*	
Asser 25		.63*	

Table 15 (continued)

Variable	Cooperation	Assertion	Self-Control
Asser 30		.70*	
SC 4			.92*
SC 7			.55*
SC 13			.57*
SC 14			.40*
SC 15			.76*
SC 20			.72*
SC 21			.74*
SC 23			.51*
SC 26			.65*
SC 28			.80*

Note. $N = 185$. SSRS-T = Social Skills Rating System-Teacher Form. Coop = Cooperation; Assert = Assertion; SC = Self-Control.

* $p < .05$.

SEM summary. Three measurement models were run for the ASCA phenotype, ASCA sitotype, and SSRS-T models prior to running the hypothesized structural models. However, the fit of the models to the data was suspect or did not meet guidelines of adequate fit. As a result, it was not viable to run the structural models. Without an acceptable measurement model, the structural model will not produce an adequate fit to the data (Kline, 2005). To understand the data better, alternate analyses were conducted that may provide indirect tests of the hypotheses.

Post-Hoc Analyses: Canonical Correlation Analyses (CCA)

The focus of the initial hypotheses were whether teachers' perception of children's problem behaviors could be useful in terms of predicting social skills. It was hypothesized that knowing the context in which the problem behaviors occurred would aid in the prediction of

poor social skills. Canonical correlation analyses (CCA) was run as a proxy to test the hypotheses because CCA allows for the comparison of linear comparisons of one set of variables to another set. Three post-hoc CCA analyses were performed to assess the relationships between the following variables: (a) the ASCA context and SSRS-T variables; (b) the ASCA phenotype and the SSRS-T variables; and (c) the ASCA phenotype composite adjustment variables and the SSRS-T variables. The selection and interpretation of canonical functions were based on statistical significance of .01 and practical significance of R_c^2 (and r^2 for the structure coefficients) equal or greater than 10% of the variance between the synthetic variates of a function.

ASCA context and SSRS-T variables. CCA between the SSRS-T variables (Cooperation, Assertion, & Self-Control) and ASCA variables (Academic, Peer, and Teacher) indicated that at least one canonical function was statistically significant, Wilks's $\Lambda = .325$, $F(9, 435.79) = 9$, $p = .001$. The dimension reduction analyses indicated that the maximum number of canonical functions (3) were statistically significant; however, the squared canonical correlation was equal to or greater than 10% for only the first two functions: $R_{c1}^2 = .59$; $R_{c2}^2 = .16$; $R_{c3}^2 = .06$. As a result, only the first two canonical functions were interpreted. Table 16 provides a summary of the canonical correlation findings, including function coefficients, structure coefficients, proportion of variance, cross-coefficients, and R_c^2 .

For function 1, Cooperation contributed the most to SSRS-T variate, followed by Self-Control. Teachers rated children with high social skills if the children were also viewed as cooperative and had high levels of self-control. This pattern seemed to indicate that teachers' views of social skills were reflective of children's compliance in a school setting. Problems in academic and peer situations on the ASCA had strong correlations to its variate. Teachers reported having more concerns with children's behavior in the classroom setting and in settings

Table 16

Summary of Canonical Correlation Analyses of ASCA Context and SSRS-T Variables (N = 185)

Variable/ Statistic	Function I				Function II				Function III				h^2
	Function Coefficient	r_s	r_s^2	Cross Coefficients	Function Coefficient	r_s	r_s^2	Cross Coefficients	Function Coefficient t	r_s	r_s^2	Cross Coefficients	
SSRS-T													
Coop	-1.002	-.984	.968	-.757	.146	-.167	.028	-.066	-.623	-.062	.004	-.015	1.000
Assert	.209	-.281	.079	-.216	-1.177	-.930	.865	-.370	-.154	.235	.055	.056	.999
SC	-.136	-.538	.289	-.414	.349	-.203	.041	-.080	1.220	.818	.669	.193	.999
PV			.446				.311				.243		
R_c^2			.592				.157				.056		
PV			.557				.295				.158		
ASCA													
Peer	.293	.783	.613	.602	-.353	-.174	.030	-.069	-1.188	-.597	.356	-.015	.999
Acad	.785	.973	.947	.748	-.064	.043	.002	.370	1.049	.228	.052	.056	1.001
Teach	.019	.332	.110	.256	1.019	.923	.852	.367	-.272	-.192	.037	.193	.999

Note. $N = 185$. ASCA = Adjustment Scales for Children and Adolescents; SSRS-T = Social Skills Rating Scale- Teacher Edition; h^2 = communality; R_c^2 = squared canonical correlation coefficient; Coop = Cooperation; Assert = Assertion; SC = Self-Control; PV = proportion of variance; Acad = Academic; Teach = Teacher; Numbers in bold indicate the salient and interpreted functions.

with their peers. Combined, the ASCA and SSRS-T variates for function 1 seemed to indicate that teachers rated children with classroom-peer related problems as being less compliant and having less self-control.

For function 2, the Assertion variable contributed the most to the SSRS-T variate, indicating that teachers rated children with high social skills if they were viewed as assertive. The Teacher context contributed the most to the ASCA variate. When the ASCA and SSRS-T variates were combined, the finding indicated that teachers who rated students as having more difficulty interacting with them were also likely to rate these students as less assertive. Students who misbehave with teachers may be unable to effectively communicate their needs. Instead they may act out in an effort to obtain what they need.

ASCA phenotype and SSRS-T variables. CCA between the SSRS-T (Cooperation, Assertion, & Self-Control) and ASCA phenotype variables (Attention, Oppositional, Solitary Aggressive Provocative, Solitary Aggressive Impulsive, Diffident, and Avoidant) indicated that at least one canonical function was statistically significant, Wilks's $\Lambda = .306$, $F(18, 498.29) = 14.37$, $p = .001$. The dimension reduction analyses indicated that two of the three canonical functions were statistically significant and had squared canonical correlations greater than .10 ($R_{c1}^2 = .584$; $R_{c2}^2 = .241$; $R_{c3}^2 = .029$) between the respective variates; therefore, the first two canonical functions were interpreted. Table 17 provides a summary of the canonical correlation findings, including function coefficients, structure coefficients, proportion of variance, cross-coefficients, and R_c^2 .

Similar results were found for function 1 of the SSRS-T variate as were found on the previous CCA for the SSRS-T. These similarities were expected because the same variables were used and rated by the same teachers. In essence, Cooperation contributed the most to this variate, followed by Self-Control. Teachers who rated children with high social skills viewed them as cooperative with high levels of self-control. On the ASCA variate, problems with Attention,

Table 17

Summary of Canonical Correlation Analyses of ASCA Phenotype and SSRS-T Scores ($N = 185$)

Variable/ Statistics	Function I				Function II				Function III				h^2
	Function Coefficient	r_s	r_s^2	Cross Coefficients	Function Coefficient	r_s	r_s^2	Cross Coefficients	Function Coefficient	r_s	r_s^2	Cross Coefficients	
SSRS-T													
Coop	-.946	-.940	.884	-.718	-.279	-.341	.116	-.168	.664	.024	.001	.004	1.001
Assert	.387	-.169	.029	-.129	-1.090	-.799	.638	-.393	-.337	-.577	.333	-.099	1.000
SC	-.304	-.583	.340	-.445	.767	.044	.002	.021	.973	-.812	.659	-.139	1.001
PV			.417				.252						
R_c^2			.583				.241						
PV			.314				.239						
ASCA													
Atten	.826	.972	.945	.742	.077	-.056	.003	-.028	-.905	-.218	.048	-.037	.948
Opp	.107	.560	.314	.428	-.040	-.226	.051	-.111	.422	.419	.176	.072	.365
SAP	.094	.654	.428	.499	-.138	-.266	.071	-.131	.633	.486	.236	.083	.499
SAI	.145	.409	.069	.312	.071	-.064	.004	-.032	.538	.561	.315	.096	.073
Diff	.040	-.040	.002	-.031	.844	.964	.929	.474	.191	.054	.003	.09	.931
Avoid	.108	.174	.030	.133	.244	.613	.376	.301	.103	.062	.004	.011	.406

Note. $N = 185$. ASCA = Adjustment Scales for Children and Adolescents; SSRS-T = Social Skills Rating Scale- Teacher Edition; h^2 = communality; R_c^2 = squared canonical correlation coefficient; Coop = Cooperation; Assert = Assertion; SC = Self-Control; PV = proportion of variance; Acad = Academic; Teach = Teacher; Numbers in bold indicate the salient and interpreted functions.

Oppositional behaviors, Solitary Aggressive (Provocative) behaviors, and Solitary Aggressive (Impulsive) behaviors had strong correlations with their variate. This pattern suggested that teachers reported having more concerns with children's externalizing behaviors than internalizing behaviors. When the ASCA phenotype and SSRS-T variates for function 1 were combined, the relationship indicated that teachers rated students with externalizing behaviors as less compliant and having less self-control.

For function 2, Assertion contributed to most to SSRS-T variate as on the previous CCA's second function. Problem behaviors in Diffident and Avoidant contributed the most to the ASCA variate, indicating that teachers rated student behaviors as problematic if they were internalizing types of behaviors. When the ASCA phenotype and SSRS-T variates for function 2 were combined, the pattern indicated that teachers rated students with internalizing behaviors as less assertive.

ASCA composite adjustment scales and SSRS-T variables. CCA between the Overactivity and Underactivity ASCA variables and SSRS-T variables indicated that at least one function was statistically significant, Wilks's $\Lambda = .320$, $F(6, 360) = 46.06$, $p = .001$. The dimension reduction analyses indicated that the maximum number of canonical functions (2) were statistically significant and both tapped 10% or more of the variance between the respective synthetic variates of each function ($R_{c1}^2 = .586$; $R_{c2}^2 = .226$). As a result, both functions were interpreted. Table 18 provides a summary of the canonical correlation findings, including function coefficients, structure coefficients, proportion of variance, cross-coefficients, and R_c^2 .

For function 1, the SSRS-T variate reflected the same results as the other two CCAs in that Cooperation, followed by Self-Control, best described the variate and was reflective of teachers equating social competence with child compliance in the school setting. On the ASCA variate, problems with Overactivity had strong correlations to its variate. Teachers reported having more concerns with

Table 18

Summary of Canonical Correlation Analyses between ASCA Composite and SSRS-T Variables

Variable Statistic	Function I				Function II				h^2
	Function Co	r_s	r_s^2	Cross Co	Function Co	r_s	r_s^2	Cross Co	
SSRS-T									
Coop	-.950	-.947	.897	-.725	-.246	-.321	.103	-.153	1.000
Assert	.364	-.187	.035	-.143	-1.105	-.807	.651	-.384	.686
SC	-.290	-.583	.340	-.447	.754	.040	.002	.019	.342
PV			.441				.267		
R_c^2			.587				.226		
PV			.483				.517		
ASCA									
Over	.998	.990	.980	.758	-.086	-.145	.021	-.069	1.001
Under	.145	.086	.007	.066	.991	.996	.992	.474	.999

Note. $N = 185$. ASCA = Adjustment Scales for Children and Adolescents; SSRS-T = Social Skills Rating Scale- Teacher Edition; h^2 = communality; R_c^2 = squared canonical correlation coefficient; Coop = Cooperation; Assert = Assertion; SC = Self-Control; PV = proportion of variance; Acad = Academic; Teach = Teacher; Numbers in bold indicate the salient and interpreted functions; Co = Coefficient.

externalizing behaviors, which mirrors the results of the previous CCA. When the ASCA and SSRS-T variates were combined for function 1, the pattern indicated that teachers rated children with externalizing behaviors as less compliant and having less self-control. For function 2, CCA results were the same as the previous CCAs with the SSRS-T Assertion variable contributing most to the variate. Underactivity contributed the most to the ASCA variate, indicating that teachers rated internalizing behaviors as problematic. Combined, the two variates reflected that teachers tended to rate children who had more internalizing problems as less assertive.

Discussion

The purpose of this study was to examine the nature of the relationship between children's problem behaviors and social skills, and between the context of problem behaviors and social skills. The relationship between the context of problem behaviors and social skills was hypothesized to better fit the data than the relationship between problem behaviors and social skills because knowing the context in which children's problem behaviors occur would aid in detecting teachers' perception of poor social skills. Therefore, scores from a teacher rating scale that accounts for the context in which behaviors occur would have a better fit to the sample data than scores on a teacher rating scale that does not account for the context. To test these hypotheses, two structural models were proposed: (a) the context of children's problem behaviors, measured by the ASCA context scores (McDermott et al., 2005) was linked to various social skills, as measured by the SSRT-R (Gresham & Elliot, 1990) versus (b) the type of children's problem behaviors, measured by ASCA phenotype scores (McDermott et al., 1993) was linked to various social skills (SSRT-R; Gresham & Elliot, 1990). However, SEM could not be conducted, as the measurement models via CFA for all three measures (ASCA phenotype scores, ASCA context scores, and SSRS-T scores) were not viable. As a result, the hypotheses could not be tested. As a proxy to address the hypotheses, three canonical correlation analyses (CCA) were conducted to examine the relationships between the three set of constructs measured: (a) type of problem behaviors and context of problem behaviors; (b) type of problem behaviors and social skills; and (c) context of problem behaviors and social skills. The CCA findings provide preliminary support for the hypotheses. Prior to addressing the implications of these findings, an examination of the problems in conducting SEM is discussed. Then the CCA findings will be discussed, followed by the limitations of the study, and future research directions.

Problems in Running SEM

For each of the three confirmatory factor analyses that were run, the findings were either not to be trusted or were not viable. The ASCA phenotype measurement model had a perfect fit to the data, but the results were suspect due to the initial presence of the Heywood effect (negative variance) for an error term for one of the Diffident items. Although a constraint was properly applied and no other procedural warnings were given, the initial emergence of the Heywood effect and then a perfect fit between the model and the data prompted a re-examination of the data set. As noted in the results section, little or no variability was present in the data set. Thus, the perfect fit appears to be an artifact of the data set. The ASCA manual does not report confirmatory factor analyses for the ASCA phenotype scores. To date, no other confirmatory factor analyses have been conducted on the ASCA phenotype. Two EFA were conducted by McDermott (1994) and Canivez (2004) and both found support for six first order factors (Attention Deficit, Oppositional, SAI, SAP, Diffident, and Avoidant) and two overarching factors (Overactivity and Underactivity).

The results of the ASCA situtype measurement models indicated a poor fit to the data. The fit of the ASCA situtype model to the data was not in keeping with previous CFAs conducted on the ASCA situtype scores of teachers (CFI = .901, RMSEA = .067; McDermott et al., 2005). The difference between this CFA and the previous EFA and CFA appear to be due to sampling differences, which will be addressed below. Finally, the SSRS-T measurement model also had a poor fit to the data. No previous studies have used CFA to examine the structure of the SSRS-T; however, an EFA, conducted by the developers, supported the current factor structure of the SSRS-T (Gresham & Elliott, 1990).

The sample size for this study was the teacher ratings of 185 students randomly selected. Random selection was used in order to generalize the results to a larger population. Comparatively, validity studies for both of ASCA scoring systems (phenotype and situtype) were

based on the standardization sample for the original ASCA phenotype, for which the sample was greater than 1,000 students. The standardization sample for the SSRS-T consisted of 259 teacher ratings of student behavior. The sample size of the current study compared with the sample sizes of the standardization studies seems to be one of the reasons for the differences in findings.

Sample size can affect the results of SEM and the sample size of the current study approached the lower limits of acceptability (Kline, 2005). Sample size also can affect the generalization of results. Canivez (2006) noted that his study's small sample size ($N = 183$) limited the generalization of his results outside of Native American tribe from which he sampled. The small sample of the present study contributed to the poor fit to the data.

Using a small sample of teachers may have also contributed to the poor fit of the measurement models. When raters are asked to rate more than one student, the chance of rating different students similarly increases (Gall, Borg, & Gall, 1996). In this study 19 teachers were asked to rate 200 students (15 were not included in the study), which averages to almost 10 students per teacher. For the ASCA standardization sample, each teacher rated no more than two students, while for the SSRS-T standardization sample each teacher rated five to six students. As a result in the high teacher to student rating ratio, each teacher may have rated her group of students similarly, producing little variability in the data. Having more teachers in the sample might have produced more variation in the data as each teacher would have rated a smaller of students in relation to the total sample size.

Variability in sampling and the scores obtained is a must to perform an accurate analysis of the data. One inherent problem in using problem behavior rating scales with a general population of children is the low incidence of problem behaviors typically observed in such a population. The majority of children behave in a social acceptable manner; therefore, the distribution of problem behaviors in a population of school age children is not normally distributed. To combat such a problem the original two-factor ASCA sample was stratified

according to census data, whereas the sample for the three-factor ASCA overrepresented students with behavior problems. Therefore, many more problem behaviors were found by the raters in these studies (McDermott, 1994; McDermott et al., 2005) than in the present study which did not overrepresent students with behavior problems. Within the SSRS-T standardization sample of 259 teachers, 19.5% were identified as “handicapped” (Gresham & Elliott, 1990, p. 98). These students were oversampled because it was thought they would have more social skills problems (Gresham & Elliott, 1990). Therefore, many more problem behaviors were found by the raters in the ASCA and SSRS-T standardization samples than in the present study which did not oversample students with social skills problems. Overrepresentation of students with behavior problems or social skills deficits was not done with this study due to a small pool of participants from which to sample. The study did not specifically target students identified as needing special education services or who had diagnosed behavior problems. Therefore, very few behavior problems were identified by the raters.

The low incidence of behavior problems in the current sample was exacerbated by the type of measure used to detect the presence of problem behaviors. The ASCA is a binary measurement tool. It gives the rater two options: the behavior is present or the behavior is absent. According to Canivez (2006), a binary measure limits the variability in scores as compared with a measure that uses a Likert scale. With a Likert scale, raters are asked to rate the severity of the behavior. Because many behaviors occur on a continuum rather than a complete absence or presence, a Likert scale measure may be more sensitive to detecting problem behaviors than a binary measure (Gall et al., 1996). As to be expected, the lack of variability in the ASCA data affected the score reliability estimates. The ASCA data consisted primarily of scores of zero, indicating the absence of problem behaviors and resulting in a constant response; therefore, the internal estimates for the original ASCA phenotype scores were for the most part lower than the estimates from the ASCA manual or could not be computed. Score reliability estimates for the

ASCA situtype factors (Peer, Teacher, and Academic Contexts) and the SSRS-T factors were acceptable and approximated the results found in the respective manuals. Thus, large sample sizes and an oversampling of problem behaviors are needed in order to increase the variability in scores to conduct parametric statistical analyses with the ASCA binary situtype scoring system.

In summary, the inability to obtain viable measurement models for the ASCA phenotype, ASCA situtype, and the SSRT-R measures was due to several interrelated problems: the small number of teachers rating a homogeneous sample of children, who exhibited a low incidence of problem behaviors and social skill problems on measures that are designed with a binary rating system. To obtain comparable findings to those reported by McDermott et al. (2005), a large sample of teachers rating a more heterogeneous sample of children (oversampling of those with emotional and behavioral problems) was required. Instead, the lack of variability in the scores resulted in suspect or poor goodness of fit between the models and the obtained data.

Post-Hoc Findings

As the SEM results were not viable, post-hoc analyses using canonical correlation analyses were conducted. The relationship between the context of children behaviors and social skills of the same students were compared with the relationship between problem behaviors and social skills without considering context were examined. The current study built upon the work of previous findings (Cowen et al., 1973; Dodge et al., 1982; Douglas, 1980; Hartup, 1979; Parker & Asher, 1987) which noted a relationship between problem behaviors and social skills.

Both CCA analyses involving the original ASCA phenotype scores supported the results from previous research about the relationship between problem behaviors and social skills. Namely, students who were considered to exhibit externalizing behaviors were rated by teachers as less compliant. Douglas (1980), Landau and Moore (1991), and Zalecki and Hinshaw (2004) all examined the effects of ADHD on social skills. All three studies found that hyperactivity or aggression led to problems with social skills. In the current study, students with externalizing

behavior problems were not viewed to cooperate with peers or show enough self-control to maintain appropriate relationships with peers.

On the other hand, students with internalizing behaviors as measured by the Diffident and Avoidant subscales were rated by teachers as less assertive with peers. Although students with internalizing behaviors have the ability make and maintain friendships, their lack of assertiveness might affect the quality of the friendship. This finding builds upon the work of Cartwright-Hatton et al. (2003) who found a link between internalizing behaviors and social skills. It also builds upon the work of Lewinsohn (1974) who noted that students with internalizing behaviors display fewer prosocial skills such as friendliness, warmth, reasonableness, eye contact, and adaptive gestures. The current study expands upon previous findings in that students with internalizing behaviors might have appropriate social skills, but they lack the assertiveness to use those skills in order to become leaders in their peer groups.

Kiesner and Pastore (2005) found that knowing where children perform problem behaviors affects their selection of associations as they grow older. Specifically, as children grow older, they associate with peers who perform certain maladaptive behaviors outside of school. The focus of the current study was solely on the school setting and different contexts found in the school. Results revealed that when students' problem behaviors occurred in the classroom or peer setting (both involve peers), teachers indicated that these students were less compliant. When limited to settings within the school, externalizing behavior problems around other students led to poor social skills as rated by teachers.

On the other hand, students who demonstrated problem behaviors with teachers were rated as less assertive by their teachers. This finding indicated that students who misbehave around teachers may be unable to effectively communicate their needs and they may act out in an effort obtain what they need. A lack of assertiveness around peers may not be as problematic because these students can blend in with peers. They may have the skills needed in order to

interact with peers, but they do not have the ability to be leaders in their peer group; therefore, they follow other students.

A relationship was found between problem behaviors in Academic and Peer Contexts and poor compliance (per SSRS-T). Likewise, a relationship was found between problem behaviors in Teacher Context and Assertiveness (per SSRS-T). Post-hoc findings indicated that knowing where the problem behaviors occur appears to be a worthwhile component when examining the relationship between problem behaviors and social skills.

Limitations of the Study

Several limitations (i.e., small sample size, homogeneous sample, and a small number of raters used) of the study have been noted in explaining the difficulties of testing the measurement models for the two versions of the ASCA and SSRS-T. There were several other limitations as well. The students in this study were rated by one classroom teacher instead of multiple ratings from a group of teachers. Multiple ratings from different raters might have added variability to the data. Different teachers would also encourage ratings from different settings. Students act differently in different settings (classroom, playground, lunch period, etc.) due to environmental factors (such as different subject matter, classmates, and demands placed on the students). In addition to multiple raters, multiple measures could have been used. These multiple measures could have involved different types of methods in order to check the validity of the findings. Direct observations of the students could have added to the validity of the ratings.

Implications and Future Research

CFA should be conducted with both the ASCA phenotype and SSRS-T scales. Neither of the models produced adequate fit indices for this study. Particularly troubling were the high correlations between the SSRS-T factors (Cooperation, Assertion, and Self-Control). High correlations between factors may be an indication that the factors may be measuring similar constructs. Additionally, replication of this study with both a larger sample of participants of

various ages and a more representative sample of teachers and students will permit testing the proposed models about the relationship between teachers' perceptions of children's problem behaviors (phenotype and situtype) and social skills.

Besides replicating this study, studies are needed in comparing the impact of age and context on the relationship between problem behaviors and social skills. For example, preteens and teenagers may show a decreasing association between social skills and problem behaviors around adults as the teens develop. It would be interesting to look at the interaction between age, the context of problem behaviors and social skills.

In future studies, using other observers' (e.g., parents or peers) ratings of children's behaviors and social skills would also be beneficial to see if those findings would be comparable to the teacher ratings found in this study. Parents and caregivers have experiences with children that are unique from the experiences teachers have, and these differences may produce interesting results. The SSRS has two forms, parent and caregiver, but the ASCA is completed by teachers only. Forms with multiple raters could be used to assess the relationship of maladaptive behaviors in school settings and parent ratings of their children's social skills. Another possible study to conduct could be on the relationship between social skills and behaviors outside of school. To study this relationship, a behavior rating scale with a parent/caregiver form would be necessary.

In summary, findings from this study need to be viewed with caution given the homogeneous composition of the sample and the sample size of teachers and students, which resulted in a constricted range of scores and suspect findings about the measurement of ASCA phenotype, ASCA situtype, and SSRT-R. Structural findings obtained for the ASCA situtype measure are not comparable to findings reported by others (McDermott et al., 2005). The CCA findings built upon prior findings that a relationship exists between the type of problem behavior and social skills problems, but need to be replicated using CCA as well as testing the proposed

SEM models to ensure the stability of these findings. This study found that problem behaviors and social skills were associated with specific academic settings. Subsequent studies should be conducted to replicate these results.

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