BEHAVIORAL PROFILES OF BULLYING AND VICTIMIZATION IN ADOLESCENTS WITH SPECIAL NEEDS

by

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A thesis submitted to the Department of Psychology in conformity with the requirements for the degree of Doctor of Philosophy

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(August, 2014)

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Abstract

The defining criteria of ASD include impairments in social interaction and communication, and repetitive or stereotyped behaviors (APA, 2000). Compared to typical developing (TD) children, children with Autism Spectrum Disorder (ASD) spend more time alone and less time interacting in social situations (Humphrey & Symes, 2010). In addition, they report having few, if any, friends and are often excluded from the peer group (Wainscot, Naylor, Sutcliffe, Tantam, & Williams, 2008). Over the last decade a number of studies have emerged that consistently show that children and adolescents with ASD are at greater risk of victimization than their TD peers (Cappadocia et al., 2012; Humphrey & Symes, 2011; Little, 2002; Symes & Humphrey, 2010; Rowley et al., 2012; Van Roekel et al., 2010; Wainscot et al., 2008). Thus, the primary goals of the current research were: 1) to examine the involvement in types of bullying behavior by adolescent boys with ASD, and 2) to determine whether two factors, pragmatic language and executive functioning (EF), may contribute to the elevated risk of peer victimization experienced by this population.

The first chapter of this dissertation provides a general introduction to the current research problem. The second chapter presents a manuscript that outlines the types and frequency of bullying behaviors experienced by adolescent boys with ASD in comparison to a group of special needs (SN) peers and a group of TD adolescents. It was found that adolescents with ASD reported more social isolation in comparison to the other two groups and more physical bullying than their TD peers. This chapter also highlights the agreement found between parental and self-reports of bullying behavior experienced by adolescents with SN.

The third chapter presents a manuscript that investigates deficits in EF and pragmatic language as possible predictors of bullying behavior in adolescents with and without ASD.
Results revealed that EF was a significant predictor of physical, social, and verbal victimization for the adolescent boys with and without ASD. In the fourth chapter, research findings are discussed in the broader context of the existing literature. Implications, limitations, recruitment issues, and directions for future research are also addressed.
Statement of Originality

I hereby certify that all of the work described within this thesis is the original work of the author.

Any published (or unpublished) ideas and/or techniques from the work of others are fully acknowledged in accordance with the standard referencing practices.

Patricia H. Kloosterman

August, 2014
Acknowledgements

I would like to thank everyone who made this dissertation possible starting with my supervisors, Dr. Elizabeth Kelley and Dr. James Parker, who have provided me with invaluable feedback and support throughout this endeavor. Also, a special thank you is extended to Dr. Wendy Craig. Her extensive knowledge and expertise in bullying research was instrumental to the completion of this project. To my examiners, Drs. John Freeman, Patricia Minnes, and Jonathan Weiss, thank you for your thoughtful questions and showing interest and appreciation for my research.

To my wonderful family, thank you for your love and support during this academic journey. To my children, Jenn, Josh, and Rob, you have been my inspiration. And to my dear husband, Rick, thank you for your unwavering patience, support, and encouragement. I could not have done this without you. To my sister Barb and her husband Al, you have been tremendous in helping out during my many times of need – thank you.

I would also like to thank Autism Speaks for providing the funds to carry out my research. In addition, a heartfelt thank you goes out to all of the families who participated in my research. Without them, this research would not have been possible. Last, but not least, I would like to thank the students and research assistants in the Autism Spectrum Disorders lab at Queen’s University who were involved in this research project.
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Chapter 1:
General Introduction

1.1 Bullying: Why is it important to study?

Bullying, also referred to as peer victimization, is considered a world-wide problem (Craig et al., 2009). The rates of bullying behavior are greater in Canada than in many other countries with approximately 20% of adolescents (age 11 to 15 years) reporting being victimized or bullying others, or experiencing both bullying others and being bullied during the previous 2 months (Craig et al, 2009). Research on bullying behavior has grown substantially since the 1970s. This rapid growth of research has led to the increased recognition of the harmful consequences bullying can have for both youth who are victimized and those who bully. For example, research with typically developing (TD) children and adolescents has shown that those who bully others are more likely to have externalizing problems, such as substance abuse and delinquency (Kaltiala-Heino, Rimpela, Rantanen, & Rimpela, 2000; Sourander et al., 2006); on the other hand, a constellation of internalizing behaviors (e.g., poor self-esteem, shyness, depression, anxiety, loneliness) have been linked to peer victimization (Craig, 1998; Dyer & Teggart, 2007; Holt, Finkellhor, & Kantor, 2007; Jantzer, Hoover, & Narloch, 2006; Klomek, Marrocco, Kleinman, Schonfeld & Gould, 2007; Kumpulainen, Rasanen, & Puura, 2001; Olweus, 1993; Roberts & Coursol, 1996; Salmon, James, Cassidy, & Javaloyes, 2000). Peer victimization has also been related to school absenteeism, social withdrawal, and isolation (Kochenderfer & Ladd, 1996; Veenstra et al., 2005). In TD children and adolescents, cross-sectional studies suggest that peer victimization is not only related to low levels of social adjustment and psychological...
well-being, but also to elevated levels of psychological distress and adverse health problems (Rigby, 2003).

Although definitions of bullying vary, most include three common characteristics: 1) the act is performed with the intent of causing harm, 2) it is repeated over time, and 3) there is an imbalance in power between those involved (Craig & Pepler, 2003). It has been proposed that bullying is best understood as a relationship problem, where children and adolescents who bully others learn to use power and aggression as a means of controlling and causing distress to another person. As a result, children who experience repeated peer victimization become locked in abusive relationships that are increasingly difficult to break away from (Pepler, 2006). Such unhealthy relationships are considered destructive and can ultimately undermine healthy social-emotional development (Pepler, 2006).

Aggressive behavior can emerge as young as 17 months of age when children first begin to socially interact with others (Dunn & Munn, 1985; Hay, Castle, & Davies, 2000). When children first enter school there is a high rate of bullying behavior with one of the strongest predictors being child physical aggression (Barker et al., 2008). For example, using parental reports, Barker et al. (2008) found with a sample of 1,970 preschoolers, that approximately 30% had experienced moderate to high rates of peer victimization. The elevated rates of peer victimization seen during this transitional period may be due to the increasing amount of time children spend interacting with their peers, thus making them more susceptible to negative peer experiences (Barker et al., 2008). Another possible reason for the elevated rates of victimization experienced by this age group may be deficits in social competency. Parents have been found to play a pivotal role in the development of social competency, especially when their children make the transition to school (Ladd &
Kochenderfer-Ladd, 1998). Notably, Barker et al. (2008) found that high levels of harsh and reactive parenting styles were associated with high levels of peer victimization experienced by preschoolers.

After the transition to school, bullying behavior tends to decrease for the majority of children over the elementary school years. For example, in a longitudinal study with a sample of 5th, 6th, and 7th graders (N = 1,241), Goldbaum, Craig, Pepler, and Conolly (2003) examined the association between a variety of risk and protective factors across four developmental trajectories of peer victimization: non-victims with significantly low levels of victimization (87.8%), desisters who started high and then showed decreasing victimization (6.1%), late onset victims with increasing victimization (4.5%), and stable victims (1.6%) with consistently high victimization. Internalizing outcomes (e.g., anxiety/depression withdrawal, and somatization), low quality friendships, aggression, and social self-competence were associated with the increasing and stable victimization groups. In the bullying literature, the transition from elementary to secondary school has received much attention as this is the time that bullying behavior appears to peak (Nansel et al., 2001; Pepler et al., 2006; Sumter, Baumgartner, Valkenburg, & Peter, 2012). Cross-sectional studies indicate that this peak in bullying behavior is followed by decreased rates by the end of secondary school (e.g., Pepler et al., 2006). However, longitudinal research has shown that, for a small portion of students, bullying behavior remains stable and persists across the secondary school years. For example, Pepler, Jiang, Craig, and Connolly (2008) examined the developmental trajectories of bullying from early to late adolescence over a 7-year period. Four trajectories were revealed: 1) high-bullying group (9.9%) who consistently engaged in high levels of bullying, 2) desist group (13.4%) who reported moderate levels of
bullying in early adolescence that decreased to almost no bullying by the end of secondary school, 3) moderate group (31.5%) who reported consistently moderate levels of bullying, and 4) never group (41.6%) who almost never reported bullying. Risk factors associated with both the high-bullying group and moderate group included physical and relational aggression, moral disengagement, parental monitoring and parental trust, peer bullying, conflict with peers, and susceptibility to peer pressure.

The peak in bullying behavior during early adolescence may be partly due to a major change in social structure. For example, with entry into secondary school, the elementary peer group, in most instances, diminishes. Without a strong peer network in place, adolescents entering secondary school can become isolated, leaving them more vulnerable to peer victimization (see Malecki & Demaray, 2004). In addition, secondary schools are usually much larger than elementary schools. Such schools tend to have a more complex peer culture where group hierarchies become well established (Arnett, 2010). In order to successfully navigate the complex peer culture and establish healthy relationships, adolescents making the transition to secondary school must depend on their social competency. In viewing bullying as a relationship problem and the elevated rates of bullying behavior seen during this developmental stage, the current research has focused only on adolescents.

In summary, the last three decades have yielded an enormous body of research on bullying behavior, extending our knowledge in many areas, including prevalence rates (Craig et al., 2009), associated mental health issues (Arseneault, Bowes, & Shakoor, 2010), and developmental trajectories (Ttofi, Farrington, & Losel, 2012); however, a more comprehensive understanding of the phenomenon, such as understanding the vulnerabilities
of at-risk students and increased understanding of the underlying mechanisms is needed for
the development and implementation of effective bullying prevention and intervention
programs (Berger, 2007). Such programs can play an essential role in making our schools a
safe place for all students.

1.2 Special Education Needs and Bullying Behavior.

Although bullying has received a great deal of attention by researchers, only a
diminutive portion of this work has focused on children and adolescents with special
education needs (SN). In the existing literature it is clear that this population is at greater risk
of being involved in bullying behavior than their typically developing (TD) peers
(Cummings, Pepler, Mishna, & Craig, 2006; Mavroveli & Sanchez-Ruiz, 2011; Rose,
Espelage, & Monda-Amaya, 2009); however, why this is the case is not clear. From the
extant literature, many youth with SN who are victimized have been characterized as having
poor social skills (Christensen, Fraynt, Neece, & Baker, 2012; Kaukiainen et al., 2002;
are necessary for forming and maintaining meaningful peer relationships and social
networks. In addition, strong social networks have been found to act as a buffer against peer
victimization for TD youth (see Malecki & Demaray, 2004). As pointed out by Mishna
(2003), there are a number of reasons why children and adolescents with SN have deficits in
social skills. One possible explanation is that youth with SN spend more of their time in
isolation that in turn results in fewer opportunities to learn and practice their social skills.
Alternatively, it could be that having academic problems results in poor self-esteem, poor
self-confidence, and/or other negative attributes that inhibit the development of social skills.
A more dominant explanation, adopted by the current research, suggests that for many SN
populations deficits in social skills are due to neurological deficits. Such deficits are believed to play a dual role in causing both academic and social problems. “There are numerous such deficits which can manifest in many ways. Examples include difficulties with language, attention, and information processing, and problems interpreting social information such as facial expressions, all of which may interfere with everyday social interactions and discourse” (Mishna, 2003, p. 337).

In recognizing bullying as a relationship problem, and the lack of social competency displayed by many youth with SN, the current research focused primarily on a group of adolescent boys with Autism Spectrum Disorder (ASD), a SN population in which difficulties with social interaction are foremost (American Psychiatric Association [APA], 2013), in comparison to a TD group of boys and a group of boys with SN without ASD. In addition to impairment in social interaction, the defining features of ASD include impairment in communication, and repetitive and ritualistic types of behaviors (APA, 2013). Until recently, Autistic Disorder, Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS) and Asperger’s Disorder encompassed this spectrum of disorders. ASD is more prominent in boys than girls and is currently considered to be one of the most common forms of developmental disorders (Newschaffer et al., 2007). Although potential causal factors continue to generate considerable debate, prevalence rates of ASD have been steadily increasing with rates reported as high as 110 in 10,000 (see Matson & Kozlowski, 2011). Over the last decade a growing number of studies have converged in finding that children and adolescents with ASD are at greater risk of victimization than their TD peers (Humphrey & Symes, 2011; Little, 2002; Montes & Halterman, 2007; Pouw, Rieffe, Stockmann, &

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1 In the recently published DSM-V, autistic disorder, Asperger’s syndrome, and PDD-NOS have been collapsed into one category - “autism spectrum disorder” with one set of defining criteria (APA, 2013). Note: the 2nd manuscript of the current research has been published with reference made to the DSM-IV (APA, 2000).
Gadow, 2013; Sofronoff, Stone, & Dark, 2011; Humphrey & Symes, 2010; Rowley et al., 2012; Van Roekel et al., 2010; Waincot, Naylor, Sutcliffe, Tantam, & Williams, 2008); however, many of these studies are limited in a number of important ways.

1.3 Methodological Weaknesses of Previous ASD Studies

The current research addresses four methodological concerns with regards to previous research on bullying behavior and ASD. First, several of these studies have relied solely on parental reports of bullying behaviors, while others have exclusively based their findings on the use of self-reports or child interviews. Given that impairments in communication and difficulties in understanding social situations are defining features of ASD, it is questionable as to whether or not adolescents with ASD can reliably report on their bullying experiences. On the other hand, many parents of TD children are not fully aware of their child’s involvement in bullying behavior (Mishna, Pepler, & Weiner, 2006; Sawyer, Mishna, Pepler, & Wiener, 2011), which raises questions about whether reports from ASD or SN parents regarding their child’s bullying behaviors may be more in concordance than reports from parents of TD children. Parents of children with ASD are often involved in helping their child to build meaningful and stable friendships (Frankel & Whitham, 2011; Howard, Cohn, & Orsmond, 2006). As a result, it is likely that these parents are well aware of the relationship problems experienced by their children.

A second limitation is the issue of comorbidity. To date, only one of the extant studies on bullying in ASD controlled for a secondary diagnosis of Attention-Deficit/Hyperactivity Disorder (ADHD) (Montes & Halterman, 2007), a childhood disorder that is often comorbid with ASD (for review see Reiersen & Todd, 2008). Like ASD, those with ADHD have been found to be at greater risk of bullying behavior than their TD peers.
(Weiner & Mak, 2009). It is likely that symptoms unique to each of these disorders contribute to the vulnerability of bullying behavior. For example, there is some evidence indicating that impairments in social interaction and communication place those with ASD at risk of peer victimization (Humphrey & Symes, 2011), whereas in ADHD hyperactivity and self-control have been associated with being victimized, as well as bullying others (Redmond, 2011; Unnever & Cornell, 2003).

A third limitation of the previous body of work is the diverse methods used to operationalize bullying behavior; in many cases ASD researchers have failed to provide a clear definition of bullying behavior to their participants preceding data collection. This is a problem as a lack of understanding as to what behaviors do and do not constitute bullying can result in inaccurate prevalence rates. For example, adolescents who are provided with a definition of bullying behavior report lower prevalence rates of victimization than those not provided with a definition (Vaillancourt et al., 2008).

A further limitation of extant ASD studies is that the majority have focused solely on peer victimization, neglecting the possibility that children and/or adolescents with ASD might bully others as well as be victimized. Bullying research with TD children has revolved around the delineation of four distinct groups: 1) those who bully others, 2) those who are victimized by others, 3) those who both bully others and are victimized themselves (‘bully-victims’), and 4) those who do not bully others or experience victimization (Jordan & Austin, 2012). In comparison to those who only bully others and those who experience just victimization, bully-victims are considered an extremely high-risk group (Nansel et al., 2001). For example, they are more likely to have poorer psychological health, lack self-control, experience more physical injury, possess weaponry, and have poorer school attitudes
and academic performance (Haynie et al., 2001; Kumpulainen & Rasanen, 2000; Stein et al., 2007; Unnever, 2005; Veenstra et al., 2005). Bully-victims are more likely to be boys than girls. They have fewer friends and experience greater social isolation than their peers (Veenstra et al., 2005). As adolescents, bully-victims quite often meet criteria for externalizing disorders such as ADHD and conduct disorder (Salmon et al., 2000; Veenstra et al., 2005). Determining if individuals with ASD fit the profile of a bully-victim is critical for the development of effective prevention, and intervention programs for this population.

The methodological concerns outlined above leave a number of important issues unresolved, such as the type and frequency of bullying behaviors experienced by adolescents with ASD. The current research addressed these unresolved issues in a number of ways. For example, parental reports and self-reports from adolescents regarding their experiences with peer victimization and bullying others were both collected and data examined for concordance. As well, comorbid ADHD in our sample of adolescent boys was taken into consideration across both studies. To further address the methodological shortcomings of previous research, all participants were presented with a clear definition of bullying behavior prior to completing the parental or self-report measures.

The current research is divided into two studies. In the first study I examined the frequency of bullying behaviour experienced by the adolescent boys across the three groups (ASD, SN, & TD) while addressing the methodological concerns stated above. This step was essential for confirming that the elevated rates of bullying experienced by adolescents with ASD were not a function of these methodological limitations.
1.4 ASD and Forms of Bullying.

There are various forms of bullying, most often categorized as social, physical, cyber, and verbal. While each of these forms is considered distinct, it is not uncommon for perpetrators to employ a combination, or all of these modes, towards a single child being victimized (Stassen, 2007). Social bullying is considered a form of social aggression because it interferes with the social relationships between the child being victimized and his or her peers (e.g., excluding individuals from group activities; spreading of rumors). This form of bullying appears to be more common than physical bullying in TD children and has been observed quite early in life with preschool children, most notably TD girls (Crick et al., 2006). Given the difficulties individuals with ASD have with social interaction and communication, it is expected that this type of bullying would be experienced by this population, most notably for social isolation. In support of this view, a number of studies have found that individuals with ASD have a limited peer network, as they often report few, if any, friends (Rowley et al., 2012; Wainscot et al., 2008). In addition, Humphrey and Symes (2011) found that students with ASD spent less time interacting in a positive way with their peers and more time alone than TD students or students with dyslexia. It is also possible that the lack of friends and increased social isolation experienced by individuals with ASD make this population more vulnerable for additional types of bullying behavior (e.g., physical and verbal).

Physical bullying is most visually obvious and includes kicking, pushing, punching, assaulting, or beating the youth who is victimized. A consistent finding in the literature is that physical bullying is more common in TD boys than TD girls and declines with age (Pepler et al., 2006). Given that ASD is more common in boys than girls, it is probable that
adolescents with ASD will be involved in this type of bullying behavior. A further contributing factor is that individuals with ASD may be perceived by their perpetrator(s) as being different and/or as physically weak. In support of this idea, children with ASD have been found to have difficulties with motor movement and may be seen by others as being awkward and/or clumsy (Pan, Tsai, & Chu, 2009); poor gross motor skills have been found to contribute to the risk of being physically bullied during childhood (Bejerot, Edgar, & Humble, 2011).

Growing ever more frequent is cyberbullying, which is considered to be more problematic than traditional bullying since it has the potential to reach a large audience in a relatively short period of time (Sticca & Perren, 2013). This type of bullying is often anonymous, which can lead to an inhibition effect where bullies act out more frequently or intensely when not physically face-to-face with the child being victimized (Li, 2006; Suler, 2004). Research suggests that individuals with ASD may have a lower risk of cyberbullying, since most youths with ASD spend very little of their spare time engaging in social-media (e.g., internet, chatting, email), preferring non-social forms of media use such as playing video games and watching television (Mazurek, Shattuck, Wagner, & Cooper, 2012).

Verbal bullying includes repeated name calling, teasing, and/or making derogatory remarks. Like social bullying, verbal bullying tends to be more common in TD girls than TD boys (Carbone-Lopez, Esbensen, & Brick, 2010). Both verbal and social bullying have been found to increase throughout childhood and peak at puberty between the ages of 11 and 15 for TD children (Elsea & Rees, 2001; Pellegrini & Long, 2002). Verbal bullying may include the use of sarcasm or figures of speech, aspects of pragmatic language with which individuals with ASD have difficulty with. It is possible that adolescents with ASD
experience elevated levels of verbal bullying; however, due to deficits in pragmatic language they may fail to recognize this type of bullying behavior. To address this issue, the current research employed both parent and self-reports of bullying behavior. Parents of TD children are not always aware of the bullying behavior experienced by their child/children (Mishna et al., 2006); however, parents of children with ASD are often involved in helping their child to develop meaningful and stable friendships (Frankel & Whitham, 2011; Howard et al., 2006). As a result, parental reports, in comparison to self-reports, may present a more accurate picture of the amount of verbal victimization experienced by children with ASD.

The first study of this dissertation posed the following research questions: Do adolescent boys with ASD experience more victimization or bully others more than their TD peers and/or SN peers without ASD? Do adolescent boys with ASD differ from the latter two groups in the types of bullying behavior experienced? Answers to these research questions will not only elucidate our understanding of the bullying behaviors experienced by adolescents with ASD, but also confirm the heightened risk of this population while taking into consideration a number of methodological issues.

1.5 Theoretical Framework

The first study of this dissertation examined the rates and types of bullying behavior experienced by adolescent boys with and without ASD, while the second study focused on identifying underlying social and cognitive factors that may contribute to elevated rates seen in ASD and other SN populations. The second study is guided by a theoretical framework proposed by Kochenderfer-Ladd, Ladd, and Kochel (2009) in order to more fully understand the peer victimization experienced by adolescent boys with and without SN (see Figure 1). As pointed out by Kochenderfer-Ladd et al., when examining the potential causes of peer
victimization, researchers often focus on characteristics of the child (e.g., social behaviors, emotional reactivity, social cognition, and psychosocial vulnerability) or factors within the child’s environment (e.g., parenting practices, peer culture, and schools and teachers).

Figure 1. Child x environment model. Adapted from Kochenderfer-Ladd et al. (2009)

By integrating two separate literatures, Kochenderfer-Ladd et al. stress the importance of using “child by environment” models not only for generating and testing hypotheses, but also for interpreting the existing evidence and identifying areas for future research (Kochenderfer-Ladd et al., p. 27). Kochenderfer-Ladd et al.’s model is re-introduced in more detail in Chapter 4 of this dissertation as a means of determining avenues of future research.
Kochenderfer-Ladd et al. (2009) have identified four types of child by environment models each with its own set of assumptions: 1) continuity models, 2) additive models, 3) moderator models, and 4) mediator models. Continuity models can be behavioral or environmental with the assumption that one set of factors is the primary determinant of peer victimization, while another set of factors continues to maintain it. For example, a child may have a genetic predisposition to be aggressive, which elicits peer victimization. The child may respond to the victimization with further aggression, thus perpetuating the cycle. In this case the peers create the consequences and maintain the child’s existing predisposition to be aggressive. In additive models, the assumption is that both child and environmental factors independently contribute to peer victimization. For example, using regression analyses, Kochenderfer-Ladd (2003) found both aggression and low peer acceptance to be unique predictors of chronic peer victimization. Moderator models make the assumption that neither child nor environmental factors on their own result in peer victimization; but rather it is the interaction of these factors that determine level of risk. An example of this type of model can be seen using the child factor of gender and the environmental factor of cultural norms. In Western and other cultures, shyness is seen as being socially acceptable for girls more so than boys. As a result, shyness may contribute to the vulnerability of peer victimization for boys but not girls (Kochenderfer-Ladd et al.). In mediator models the relationships between child or environmental factors and peer victimization are mediated by additional factors. For example, dysfunctional parenting styles such as maternal over-protectiveness may lead to social withdrawal or high levels of anxiety for a child, which in turn leaves the child vulnerable to peer victimization (Kochenderfer-Ladd et al.).
In accordance with Kochenderfer-Ladd et al.’s (2009) theoretical framework, the second study of the current research focused on three child factors (psychosocial vulnerability, emotion regulation, and social cognition) and their relationship to peer victimization. By utilizing a sample of adolescent boys with ASD, I was able to investigate the extent to which symptoms central to the disorder (psychosocial vulnerability) may be associated with the elevated rate of peer victimization seen in this population. Emotional regulation (the control one has to modify or control one’s emotions) is considered one of a number of executive functions (Gioia et al., 2000). As outlined in the following section, the current research examined executive functioning and pragmatic language (a form of social cognition) as possible predictors of peer victimization.

1.6 Pragmatic Language and Executive Functioning: Factors that may be Related to Bullying in ASD.

The second study of this dissertation focused on two factors associated with ASD that might contribute to the heightened risk of peer victimization in some SN populations: pragmatic language and executive functioning (EF). Pragmatic language and EF have been recognized as playing key roles in social development (Gilotty, Kenworthy, Sirian, Black, & Wager, 2002; Jacobson, Williford, & Pianta, 2011; McKown, Gumbiner, Russo, & Lipton, 2009; Oerlemans et al., 2013; Reichow, Salamack, Paul, Volkmar, & Klin, 2008). Many researchers and clinicians agree that difficulties in social interaction, a feature central to ASD, add to the elevated risk of peer victimization seen in this population (see Humphrey & Symes, 2011); however, little systematic research has been conducted to identify specific factors that may underlie such difficulties.
Identification of specific factors that impede the development of healthy social relationships would help to elucidate why some SN populations experience elevated rates of peer victimization more so than others. Conceptually, deficits in pragmatic language and/or executive functioning can result in poor social skills, which in turn lead to maladaptive social interactions. Such maladaptive interactions inhibit the development of quality friendships and increase the risk of victimization and social isolation. This segregation, along with a diminished peer network, can not only lead to greater vulnerability for additional types of victimization (e.g., physical and verbal), but also perpetuates maladaptive social interactions due to deficits in social skills and lack of opportunities in which to practice them.

As mentioned earlier, children and adolescents with ASD may not be aware of some types of bullying due to deficits in pragmatic language. Pragmatic language is the use of language socially to achieve a purpose; it is related to the understanding of subtle social and linguistic cues (e.g., knowing the rules for taking turns and the style and tone of speech appropriate for different listeners when conversing; interpreting the meaning of gestures and facial expressions). Children with deficits in pragmatic language are thought to have difficulties in forming and maintaining peer relationships due to their inability to read social cues, and therefore in social situations may not know how to act or what to say. This difficulty in successfully navigating social situations, along with a diminished peer network, is believed to increase their vulnerability for victimization (Lindsay, Dockrell, & Mackie, 2008).

A number of studies have found deficits in various facets of pragmatic language with ASD populations. Although individuals with ASD may be able to articulate words and construct grammatically correct sentences, they often struggle in conversations. Their lack of
awareness concerning the social rules of language is considered one reason for such difficulties in dialogue (Kelley, Paul, Fein, & Naigles, 2006). With regards to recognizing the communicative intent of others, it has been found that, beginning early in life, individuals with ASD display deficits in joint attention (Mundy, Sigman, & Kasari, 1990) and have difficulty decoding facial expressions and vocal intonation (Lindner & Rosen, 2006; Peppe, McCann, Gibbon, O’Hare, & Rutherford, 2006). Difficulties in interpreting nonliteral uses of language, such as jokes and metaphor (Martin & McDonald, 2004; Mitchell, Saltmarsh, & Russell, 1997), sarcasm, and figures of speech (Happé 1995; Jolliffe & Baron-Cohen, 1999) by individuals with ASD can all lead to the misinterpretation of communicative intent. Although not specifically labeled, pragmatic language forms part of the core diagnostic criteria for impairments in social interaction and communication (e.g., eye gaze difficulties, problems in interpreting body language, use of idiosyncratic language, and difficulties in sustaining conversations). Previous research suggests that deficits in pragmatic language may be one of the most “stigmatizing” and disabling features for individuals with high functioning ASD (Landa, 2000; Ozonoff & Miller, 1996). However, deficits in pragmatic language are not unique to ASD and have also been noted in other special needs populations, including those with learning disabilities (Griffiths, 2007; Redmond, 2011; Stothers & Cardy, 2012) and ADHD (Bruce, Thermlund, & Nettelbladt, 2006; Geurts et al., 2004; Redmond, 2011). Thus, in addition to ASD, deficits in pragmatic judgment and its relationship with poor social skills may provide an explanation for the heightened risk of bullying behavior seen in other SN populations.

In addition to pragmatic language, executive functioning is considered to play a major role in social development (Jacobson et al., 2011). Executive functioning (EF) is the process
necessary for the attainment of future goals and entails a constellation of skills involving mental control and self-regulation of behavior and emotions (Welsh & Pennington, 1988). According to Gioia, Isquith, Guy, and Kenworthy (2000), EF can be broken down into two domains: behavior regulation (e.g., inhibition, shifting attention, and emotional control), and meta-cognition (initiation, working memory, planning/organizing, organization of materials, and monitoring). Children and adolescents with well-developed EF abilities are described as being less impulsive, more task-oriented and flexible in their problem-solving abilities, and more in control of their emotions. It is believed that these abilities act as a buffer against peer victimization (Jensen-Campbell, Knack, Waldrip, & Ramirez, 2009). For example, children with good EF are less likely to place themselves in vulnerable social situations; if faced with such situations, however, they are able to use their problem-solving and planning skills to resolve the situation before it gets out of hand. Because of their ability to regulate their emotions, they are more apt to respond to the perpetrator with less fear or aggression, thus warding off further provocation.

The social and communicative challenges experienced by individuals with ASD are often compounded by additional problems in executive functioning (for review see Ozonoff, South, & Provencal, 2005). Over the past two decades, a wealth of empirical research has been conducted to assess specific EF deficits within ASD populations; however, comparisons across studies are complicated as a number of diverse tasks have been used to assess EF components and not all studies have investigated the full range of EF domains. Despite these limitations, one consistent finding for individuals with ASD includes deficits in skills requiring planning and cognitive flexibility (i.e., set-shifting), while inhibitory functions appear relatively typical (Pennington & Ozonoff, 1996). Although sparse, there is also
evidence to suggest that children with ASD have difficulty in regulating their emotions (Rieffe, Camodeca, Pouw, Lange, & Stockmann, 2012). With TD children, difficulties with emotional regulation have been associated with victimization, as well as perpetration of bullying (Coolidge, DenBoer, & Segal, 2004; Mahady Wilton, Craig, & Pepler, 2000); however, how deficits in emotional regulation and other executive functions may play a role in the bullying behavior experienced by adolescents with ASD is not clear. It is possible that, when placed in a vulnerable situation, adolescents with ASD may be unable to shift their attention where needed. Their poor emotional regulation skills increase the likelihood that they respond in a fearful or angry manner. These are responses to victimization that the perpetrator is likely to find rewarding, and, as a result, the bullying is repeated. Deficits in EF are not unique to ASD and have been noted in a number of childhood disorders, especially ADHD (e.g., Holmes et al., 2010; Loo et al., 2007). Conceptually, it is likely that for some adolescents with SN, deficits in EF lead to poor social skills and maladaptive social interactions, which in return increase the risk of peer victimization, especially in the form of social isolation. Spending more time in social isolation, without a strong peer network, further increases the vulnerability to peer victimization for these adolescents.

To better understand the impact of deficits in pragmatic language and EF for bullying and victimization behaviors with ASD adolescents, the second study of this dissertation explored a number of core research questions: Do adolescents with ASD have greater impairments in pragmatic language than their TD peers and/or SN peers without ASD? Could difficulties in pragmatic language be a predictor of peer victimization? Do adolescents with ASD have greater impairments in EF based on parental reports than their TD peers and/or SN peers without ASD? Could difficulties in EF, assessed by parental reports, be a
predictor of peer victimization? If so, how is EF and/or each of its sub-domains (behaviour regulation and meta-cognition) associated with different types of victimization (e.g., physical, social, verbal, and electronic)?

The last chapter (Chapter 4) of this dissertation provides a general discussion of the key findings from the new research and, in a broader context, discuss how they are related to past research on bullying behaviors and ASD. The final chapter also addresses the limitations and implications of the two studies, as well as examines directions for future research. The findings from the two studies described in this dissertation are important as they add to a body of research that elucidates the elevated risk of peer victimization seen in adolescents with ASD. Overall, the findings of the current research have great potential for guiding the development of bullying prevention and intervention programs for adolescent boys with and without ASD.
1.7 References


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Foreword to Chapter 2

Chapter 2 consists of a manuscript that has been published by the journal entitled “Research in Autism Spectrum Disorders”. Chapter 2 adheres to APA format. Dr. Elizabeth Kelley, Dr. Wendy Craig, Dr. James Parker, and Christine Javier appear as co-authors on the manuscript.
Chapter 2:

Types and Experiences of Bullying in Adolescents with an Autism Spectrum Disorder

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2.1 Abstract

Being victimized by one’s peers is a major problem in adolescence, and research has suggested that individuals with Autism Spectrum Disorders (ASD) may experience higher rates of bullying than their typically-developing (TD) peers. However, it is currently unclear whether adolescents with ASD are victimized more by their peers simply because they are ‘different’. This study was designed to examine percentage rates across different types of bullying behavior in adolescents with an ASD (n = 24), in comparison to a group of special-needs adolescents without an ASD (n = 22), and a group of typically developing peers (n = 24), to determine whether simply being ‘different’ leads to higher rates of victimization. We also examined the agreement between parental and self-reports of bullying behavior experienced by these groups. Overall more adolescents with ASD reported victimization than adolescents in the other two groups. In addition, those with ASD reported more social bullying in comparison to the other two groups and more physical bullying than the TD group. No difference was found between parental and self-reports for the bullying experienced by the adolescents with ASD or special needs; however, TD adolescents reported higher levels of victimization than their parents reported for them. Contributing factors for the victimization experienced by adolescents with an ASD are discussed.
2.2 Introduction

Bullying has been systematically researched since the mid-1970s and is recognized as a significant and highly prevalent problem in our society (e.g., Berger, 2007). There are associated short- and long-term effects for all involved: children who bully others are at risk for delinquency (White & Loeber, 2008), substance abuse (Sourander et al., 2007), and conduct disorder (Pepler & Craig, 2000). Children who are victimized are at elevated risk for anxiety disorders (Sourander et al., 2007), sexual harassment (Gruber & Fineran, 2008), and have trouble concentrating at school (Pepler & Craig, 2000). There are also vulnerable populations, such as children with special needs, who are at heightened risk for involvement in bullying and victimization (Estell et al., 2009). Similar to normative populations, peer victimization in special-needs populations has been correlated with loneliness, anxiety, depression, somatic complaints, and mental health problems (Baumeister, Storch, & Geffken, 2007; Cappadocia, Weiss, & Pepler, 2012). To date, there is limited research on children with special needs and their involvement in bullying behavior, although work emerging from school psychology and clinical psychology strongly suggest that children with special needs are at much greater risk of being involved in bullying behavior than their typically developing (TD) peers (see review by Rose, Monda-Amaya, & Espelage, 2011). The majority of research in this area has typically concentrated on heterogeneous, rather than homogeneous, special-needs populations. As a result, it is not clear whether some types of special-needs populations differ in the frequency, severity, and/or types of bullying behaviors experienced.

2.21 Autism Spectrum Disorders and Bullying Behavior

Autism Spectrum Disorders (ASD) includes Autistic Disorder, Asperger’s Disorder, and Pervasive Developmental Disorders-Not Otherwise Specified (PDD-NOS), conditions
that can be distinguished from other childhood disorders by the presence of impairments in
social interaction and communication, and repetitive or stereotyped behaviors (American
Psychiatric Association [APA], 2000). There is growing evidence that children with ASD are
at greater risk of victimization than their TD peers (Humphrey & Symes, 2011; Little, 2002;
Montes & Halterman, 2007; Sofronoff, Stone, & Dark, 2011; Symes & Humphrey, 2010;
Rowley et al., 2012; Van Roekel et al., 2010; Wainscot, Naylor, Sutcliffe, Tantam, &
Williams, 2008); however, how their experiences of bullying behavior may differ from their
special-needs peers without ASD is not well understood. Although any child with special
needs may be seen as ‘different’ by their typically developing peers and thus singled out for
victimization, individuals with ASD have added risk factors due to their primary deficits in
social interaction. The first goal of the current study was thus to compare a group of
adolescent boys with ASD to a group of adolescents with Attention Deficit Hyperactivity
Disorder (ADHD) and/or a learning disorder (LD) and a group of typically developing (TD)
adolescents, to determine if ASD adolescents differ from the latter two groups in the
frequency and types of bullying behavior experienced.

Types of Bullying. There are various types of bullying, most often categorized as
physical, verbal, relational, or cyber. Although each of these types is considered distinct, it is
not uncommon for perpetrators to employ a combination, or all of these modes towards a
single victim (Berger, 2007). Although limited, there is evidence to suggest that children and
adolescents with ASD experience various types of victimization; however, the diverse
methodologies used by researchers make it hard to determine whether children and
adolescents with ASD are more vulnerable to some types of bullying than others. For
example, Little (2002) surveyed 411 mothers of children aged 4 – 17 years, diagnosed with
Asperger’s Disorder (AS) and/or a Non-verbal Learning Disability (NVLD). Notably, 94%
of the mothers reported that their child had been bullied in some way at least once in the past year. The two most frequent types of bullying reported were emotional bullying (75%) and physical bullying (73%) by peers and siblings. However, in contrast to other studies, it should be noted that Little’s rates include both bullying by peers and bullying by siblings. Bullying between siblings has been shown to occur at least once a month in as many as 50% of all families (Wolke & Skew, 2012). As a result, the amount of peer-related bullying experienced by the children in Little’s study is not clear.

Wainscot et al. (2008) used a structured interview to assess the perceptions of 30 high-functioning students with an ASD, in comparison to a group of TD peers, to examine whether or not the students perceived they had been bullied. Of the students with ASD, 90% reported that they were disliked by someone based on their impression of the other person ignoring them, teasing and calling them names (50%), shouting at them (6%), and/or physically abusing them (16.6%). In comparison to the TD students, Wainscot et al. reported that students with ASD experienced more victimization, yet there were no differences between the two groups across social, verbal, or physical types of bullying. One limitation of this study is that the focus was on disliking, not bullying; thus, no definition of bullying behavior was presented to the students prior to the interview. As a result, it is not clear if students held a common understanding of what types of behaviors constitute bullying.

Using on-line data from parents, Cappadocia et al. (2012) examined the rates of physical, verbal, social, and cyber types of victimization experienced by children and adolescents with ASD. It was reported that 68% of youth in their sample had experienced more than one type of victimization in the past month. The most frequently occurring types (occurring twice or more per week) were verbal (28%) or social in nature (28%), followed by physical bullying (8%) and cyber-bullying (1%). Although Cappadocia et al.’s findings
suggest that children and adolescents with ASD have an elevated risk of victimization, these researchers did not include a control group. As a result, it is unclear whether the children and adolescents with ASD might have differed from their TD peers in their experiences across the types of bullying behaviors.

**Victimization and ASD.** Characteristics of adolescents with ASD can clearly contribute to a profile of victimization for this population. For example, having a strong social network has been found to act as a buffer against being bullied in typically-developing children (see Malecki & Demaray, 2004). As many individuals with ASD report having few, if any, friends (Rowley et al., 2012; Wainscot et al., 2008), they are more likely to be vulnerable to victimization. For those who do report friendships, these friendships tend to be superficial, lacking in supportiveness and closeness (Baron-Cohen & Wheelwright, 2003; Rowley et al., 2012). Parental reports further corroborate the lack of friendships and diminished social networks experienced by children with ASD (Bauminger & Shulman, 2003). In light of their awareness of the social difficulties experienced by their children, it has been reported that parents are often involved in helping their child with ASD to build meaningful and stable friendships (Frankel & Whitham, 2011; Howard, Cohn, & Orsmond, 2006). As well, given their lack of peer-friendships, it is likely that the majority of time spent socially interacting by children with ASD is with parents and/or other family members. This lack of peer social support can place children with ASD at greater risk of victimization than their TD peers (Symes & Humphrey, 2010).

Impairments in social cognition and communication can also play a pivotal role in the victimization experienced by adolescents with ASD. In support of this, children with communication and language disorders have been found to have poorer social relationships and experience more victimization than their TD peers (McCormack, Harrison, McLeod,
Recently, Cappadocia et al. (2012) examined peer victimization experienced by 192 children and young adolescents with ASD using online parental reports. These researchers found deficits in communication to be a significant predictor of victimization.

The presence of repetitive and/or stereotyped behaviors may further heighten a profile of victimization in adolescents with ASD as research with TD adolescents has shown that those with unusual mannerisms and/or odd or irritating behaviors are often targets for teasing (Horowitz et al., 2004). In addition, Cappadocia et al. (2012) reported that adolescents with ASD who experienced high-levels of victimization were rated as having more self-injury/stereotypic behavior than those who experienced low victimization or no victimization at all.

**Bullying Others and ASD:** To date, few studies have examined whether children and adolescents with ASD are at greater risk of having a dual status of being both victimized and a perpetrator of bullying. Rowley et al. (2012) assessed bullying behavior with a sample of 100 children with an ASD using parental and teacher responses to two items from the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997): “often fights with other children or bullies them” and “picked on or bullied by other children”. Parents, but not teachers, reported elevated rates of their children bullying others (13.7%); however, both parents and teachers reported elevated rates for the children being victimized (33% & 11.6%, respectively). A major limitation of Rowley et al.’s study is that the SDQ was not designed specifically to assess bullying behavior and the two items used fail to address specific types of bullying behavior (e.g., social, verbal, physical).

Using self-reports, peer, and teacher ratings, Van Roekel et al. (2010) examined the prevalence of bullying behavior with 230 adolescents with ASD. Of the adolescents with
ASD, 31 had a secondary diagnosis of Attention Deficit Hyperactivity Disorder (ADHD). The prevalence rates of bullying others and being victimized varied across peer, teacher, and self-ratings for the adolescents with ASD. Teachers reported significantly more bullying (46%) and victimization (30%) behaviors than did the peers and the adolescents with ASD. In contrast, peers rated significantly less bullying (19%) and victimization (17%) than the teachers and the adolescents with ASD themselves. One limitation of Van Roekel et al.’s study was the inclusion of adolescents with ASD and co-morbid ADHD. High rates of bullying behavior have also been found in children and adolescents with ADHD, and in many cases these individuals present with a dual status of being victimized, as well as bullying others (Weiner & Mak, 2009). Further, Montes and Halterman (2007) examined whether children with ASD and comorbid ADHD/ADD bullied others more than those with only ASD. Parents were asked how often their child had bullied, or was cruel or mean to others. Based on this single question it was found that the children with ASD and ADHD/ADD were 5 times more likely than those in the general population to bully others; however, the rate of bullying others by children with ASD only, was comparable to that found in the general population. Hinged on a single question, Monets and Halterman’s findings are limited. As well, these researchers only assessed bullying others and it is possible that rates of victimization may differ between children with ASD with and without ADHD-related symptomatology.

Conceptually, there are a number of reasons as to why adolescents with ASD might be a perpetrator of bullying, as well as being victimized. For example, individuals with high-functioning ASD can easily become overwhelmed by environmental stressors (Attwood, 2007). A lack of efficient coping skills may not only place this population at risk for victimization, but can also lead to maladaptive responses to the victimization, including acts
of explosive aggression. The social isolation and peer rejection experienced by these adolescents may also offer an explanation for the emergence of a dual status of both victim and bully. For example, Crescioni and Baumeister (2009) point out that social rejection can lead to a number of adverse emotional consequences (e.g., lack of empathy and/or self-regulation), as well as produce a hostile cognitive bias where rejected individuals are more likely to perceive hostility in the ambiguous behaviors of others. This cognitive bias, in combination with such negative emotional consequences, is believed to lead to increased aggression by the rejected individual toward the perpetrator, and/or novel others. In line with this, individuals with an ASD have been found to have deficits in empathy, as well as difficulties with regulating their emotions (Baron-Cohen & Wheelwright, 2003; Samson, Huber, & Gross, 2012).

2.22 Methodological Considerations

Although there is strong evidence to suggest that children and adolescents with ASD are at greater risk of bullying behavior than their TD peers, some methodological considerations need to be addressed. First, of the existing studies, some researchers have relied solely on data obtained from self-report measures or interviews with children and adolescents with an ASD to assess bullying behavior. This may be problematic given one of the triad of defining criteria in ASD is difficulties with communication. To date it has not been established as to whether children and adolescents with an ASD can reliably report on their experiences of bullying behavior. On the other hand, other researchers have relied solely on parental reports of their child’s involvement in bullying behavior. Within studies of TD children, it has been shown that many parents are not aware of their children’s experiences with bullying behavior. For example, Mishna, Pepler, and Weiner (2006) reported that while parents and their grade 4 and 5 children generally both understood the
defining features of bullying, almost half of the parents were not aware that their child was bullied. Therefore, a further goal of the current study was to examine the agreement between parent- and self-reports of ASD and other special needs adolescents’ experiences with bullying behavior. Given that school boards encourage involvement of parents of special needs adolescents in assessment, programming, and monitoring of their child’s progress, we anticipate high agreement will be found between parental and child reports.

Second, with the exception of Montes and Halterman (2007) none of the existing studies examining bullying behavior and ASD have controlled for comorbidity with ADHD. This is a concern as children and adolescents with ADHD, like those with ASD, are at greater risk of bullying behavior than their TD peers and quite often have a dual status of being both a victim and perpetrator (Weiner & Mak, 2009). For those with ADHD it is likely that symptoms central to the disorder are responsible for their involvement in bullying behavior (e.g., inattentiveness and hyperactivity). Notably, Weiner and Mak (2009) found that deficits in social skills did not predict bullying behavior in this population over and above ADHD symptomatology. This suggests that while both adolescents with ASD and ADHD are at greater risk of bullying behavior than their TD peers, different symptomatology may play a critical role in their involvement in such behavior. The current study addresses this issue by excluding adolescents with ASD who have a secondary diagnosis of ADHD.

Last, for the existing studies examining bullying behavior in ASD, researchers have operationalized bullying behavior in a number of ways and in many cases have failed to provide a clear definition of bullying behavior to parents, teachers, and/or children, prior to data collection. Bullying has been defined as a relationship problem involving the repeated abuse of power (Olweus, 1993; Pepler & Craig, 2000). It should be noted that disliking someone, or being mean to someone, does not represent bullying behavior when it does not
involve an imbalance in power. The current study addresses this issue by providing a clear
definition of bullying behavior to children with ASD and their parents, prior to data
collection.

2.23 The Current Study

The current study is one of few to examine the types of bullying behavior experienced
by a homogeneous group of adolescent boys with high-functioning ASD (HF-ASD). It is
predicted that more adolescent boys with HF-ASD will report victimization than their TD
peers. The current study is also one of the first to examine the agreement between parent and
child reports of bullying behaviors with a special needs population. Given the added
involvement of parents of special-needs children with schools and health professionals, it is
predicted that there will be high agreement between self-reports of children with special
needs and parental reports regarding bullying behavior. Due to the sparse amount of research
conducted in this area, no further predictions have been made. The findings of the current
study will add to an emerging body of research in this area and assist in the development of
prevention and intervention programs for adolescents with ASD.

2.3 Methods

2.31 Participants

Due to the small prevalence rate of HF-ASD in girls, we recruited only boys for the
current study. Participants consisted of 70 adolescent boys, ranging in age from 11 to 18
years ($M = 14.76; SD = 1.90$), with 24 having a diagnosis of HF-ASD, 22 with a diagnosis of
a Learning Disorder (LD) and/or ADHD (LD/ADHD), and 24 TD adolescent boys with no
diagnosis and no developmental delays. We included adolescents with ADHD or LD as a
comparison group in the current study, because they, similar to adolescents with ASD, have
been shown to be at greater risk of being involved in bullying behavior than their TD peers
(Twyman et al., 2010). This comparison group allowed us to determine whether just “being different” or having special needs might contribute to victimization of adolescents with ASD. Our ASD sample was limited to high functioning adolescents (HF-ASD) who had a confirmed ASD diagnosis, no impairment in cognitive abilities, and no secondary diagnosis of ADHD. In the LD/ADHD group, 13 boys had an LD, 7 had ADHD, and 2 had both an LD and ADHD. The three groups of boys did not differ in age, $F(2,67) = 0.76, p > .05$, and all boys had an IQ in the average range: HF-ASD ($M = 103.04; SD = 14.80$), LD/ADHD ($M = 99.45; SD = 11.74$), TD ($M = 108.63; SD = 9.79$). However, the boys in the LD/ADHD group had a significantly lower IQ than those in the TD group, $t(44) = 2.88, p < .01$.

In the HF-ASD group, three boys had a secondary diagnosis of Anxiety Disorder, one had Post Traumatic Stress Disorder, while three also had a Learning Disorder. In the LD/ADHD group, three boys had a secondary diagnosis of Anxiety Disorder.2 Participants were recruited through three secondary schools and various community organizations. The boys in the HF-ASD group and LD/ADHD group had an individual education plan in place and were receiving special education. The three groups of boys did not differ significantly on SES, with the majority of parents reporting a family income of $65,000 or greater.

Consent was required and received from one of the adolescent boy’s parents, and the adolescent boys themselves gave written assent. This study was in ethical compliance with the Institutional Health Sciences Research Ethics Board. For participating in the study, the adolescent boys received $10 for each hour of participation and their family was entered into a raffle to win a $50 gift certificate to an electronics store.

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2 Data from adolescents with a comorbid disorder were omitted and all analyses were re-run. Our findings did not change, thus, these cases were not excluded from the current study.
2.32 Measures

**Autism Diagnostic Observation Schedule – Generic** (ADOS-G; Lord, Rutter, DiLavore, & Risi, 1989). The ADOS-G is a semi-structured behavioural assessment that can be used to confirm level of autism symptoms for adolescents classified as having Asperger’s/High Functioning Autism or PDD-NOS. During this assessment, the individual is given one of 4 modules based on his or her expressive language level. The 4th module is used for high-functioning adults and adolescents, thus was employed for this study. Using the ADOS-G, diagnoses were confirmed for all students with ASD.

**Wechsler Abbreviated Scale of Intelligence** (WASI; Wechsler, 1999): The WASI is a standardized test used to assess general intelligence. This scale yields three scores: verbal, performance, and full-scale IQ. This test was given to insure that all the participants had a full-scale IQ within the average range.

**Bullying/Victimization Questionnaire (BVQ)**. Based on the Bully/Victim Inventory (Olweus, 1997) this self-report measure assesses the experiences of being physically, verbally, and relationally victimized, and experiences with bullying others. The questionnaire begins with the following definition of bullying: *We say a student is BEING BULLIED when another student, or a group of students, say or do nasty and unpleasant things to him or her. It is also bullying when a student is teased repeatedly in a way he or she does not like or when he or she is deliberately left out of things. But it is NOT BULLYING when two students of about the same strength or power argue or fight. It is also not bullying when the teasing is done in a friendly and playful way.* The BVQ consists of two parts. In the first part (Part A), the student is first asked to answer a general question: *“How often have you been bullied at school in the past couple of months?”* using the following 5-point rating scale: 0) I have not been bullied in the past couple of months, 1) only once or twice, 2) 3 times a month,
3) about once a week, and 4) several times a week. Using this same rating scale, the student is then asked to give responses to nine statements regarding types of bullying behavior experienced. Sample statements include, “I was called mean names, was made fun of, or teased in a hurtful way”, “Other students left me out of things on purpose, excluded me from their group of friends, or completely ignored me”, “I was bullied using a mobile phone”, and “I was hit, kicked, pushed, shoved around, or locked indoors.” In the second part (Part B), the general question, statements regarding types of bullying behaviors, and rating scale, are identical to the first part, with the exception that the wording is reversed to reflect bullying others (e.g., “How often have you bullied others at school in the last couple of months?”). A parent version of the BVQ was developed for use in the current study where “I” statements were changed to read “my child”.

2.33 Procedure

Adolescents recruited from the secondary mainstream schools (n = 13) underwent individual testing sessions in a quiet room provided by each of the schools, whereas adolescents recruited through community organizations (n = 57) completed individual testing sessions in a quiet room in a university laboratory. Participants completed 1 to 2 sessions depending on group status. For the adolescents with HF-ASD, the ADOS was administered during the first session to confirm ASD diagnoses. For this group of adolescents, the second session involved administering the WASI and completion of the Bullying/Victimization questionnaire. For the LD/ADHD group and TD group, participants completed the WASI and Bullying/Victimization questionnaire during one session. Parents were not present during the sessions. For adolescents who completed testing sessions in the university laboratory, parents completed the Bullying/Victimization questionnaire while waiting in a separate room. For adolescents who completed the testing sessions in their home school, the parent questionnaire
was sent home with the adolescent; parents then returned the completed questionnaire by mail to the researcher.

2.34 Data Analyses

Data were analyzed using SPSS for Windows statistical software package, version 17.0. First, ANOVAs were utilized to examine group differences regarding age and demographics. Chi Square tests were then employed to determine whether the groups differed in the number of adolescents who reported being victimized, or who bullied others, within the past couple of months. For the next set of analyses, MANCOVAs were employed to determine if the three groups differed in amount of victimization, or bullying others, across the nine types of bullying behaviors (groups x types of victimization/bullying others) with age as a covariate. Lastly, MANOVAs were employed to determine if there were any differences between parental reports and their child’s self-report across the nine types of bullying behavior reported for both being victimized and bullying others. Cohen’s $d$ was used to report effect sizes for all group comparisons. A Cohen’s $d$ of .2 is considered to be a small effect size, .5 medium, and .8 large (Cohen, 1988).

When examining types of victimization, we used the highest score reported in Part A of the BVQ across each the nine types of victimization (0 = I have not been bullied in the past couple of months, 1 = only once or twice, 2 = three times a month, 3 = about once a week, and 4 = several times a week). This same procedure (using scores from Part B of the BVQ) was used when examining types of bullying others.

2.4 Results

2.41 Group Comparisons for Being Victimized and Bullying Others

3 Although not included in the published version of this manuscript, an additional analysis was conducted to examine the correlations between parent and child reports of bullying behavior (see Appendix D).
Chi square tests revealed that significantly more adolescent boys in the ASD group reported being victimized in some way (within the last couple of months) than boys in the TD group, $\chi^2 (1) = 4.15, p < .05$; however, no differences were found between the ASD group and the LD/ADHD group, $\chi^2 (1) = 2.09, p > .05$, or between the LD/ADHD group and TD group, $\chi^2 (1) = 0.32, p > .05$. Table 1 displays the percentage rates, across types of bullying behavior, for adolescents reporting they had been bullied or bullied others at least once in the past couple of months.

We then examined whether the three groups differed with regards to types of victimization experienced, controlling for age. As illustrated in Figure 1, there was a significant difference between groups ($p < .05$) for two of the nine types of bullying (left out on purpose; hit, kicked or pushed), with adolescents in the HF-ASD group reporting being left out on purpose significantly more than both adolescents in the control group, $F(1,46) = 6.06, p < .05, d = .68$, and adolescents in the LD/ADHD group, $F(1,44) = 4.50, p < .05, d = .54$. Adolescents with HF-ASD also reported being hit, kicked or pushed significantly more than adolescents in the control group, $F(1,46) = 4.23, p < .05, d = .51$, however, no significant difference was found between the adolescents with HF-ASD and adolescents with LD/ADHD for this type of bullying behavior, $F(1,44) = 3.44, p > .05$. In comparing the adolescents with a LD/ADHD to the control group, no significant differences were found for being left out on purpose, $F(1,44) = 0.19, p > .05$, or for being hit, kicked or pushed, $F(1,44) = 0.03, p > .05$.

Additional Chi Square tests revealed no difference between the three groups for the number of adolescents who reported bullying others (within the last couple of months) in some way.

2.42 Parental Versus Child Reports

Parental reports on bullying behavior were available for 21 adolescents with HF-ASD, 23 adolescents in the control group, and 21 adolescents with a LD/ADHD. No significant
differences were found between parent reports and child reports of victimization across all nine types of behaviors ($p > .05$) for both the adolescents in the HF-ASD group and the LD/ADHD group. However, there was a significant main effect of the control group, in that parents reported lower rates for their children for being *called mean names/made fun of/teased* than their children, $F(1,44) = 5.88, p < .05, d = .72$.\(^4\) When examining differences between parent and child reports for bullying others, no significant differences were found for both the HF-ASD group and LD/ADHD across all nine types of behaviors ($p > .05$). However, there was a main effect for the control group, in that parents reported significantly lower rates of their child bullying others using *mean names/making fun of/teasing* than the children themselves, $F(1,44) = 8.94, p < .05, d = .89$.\(^5\)

### 2.5 Discussion

The current study supports previous research in demonstrating that adolescents with HF-ASD are at an elevated risk for peer victimization. As well it highlights how specific populations can differ in their experiences of bullying behavior, and that parents of special needs populations are more in agreement with their child’s reports of their bullying activities than parents of TD children. Significantly more adolescents with HF-ASD reported being victimized within the past couple of months than the adolescents in the control group; however, there were no significant differences between groups for bullying others. Second, adolescents with HF-ASD reported experiencing more social exclusion (e.g., being left out on purpose) than both their LD/ADHD and TD peers, and more physical victimization (being hit, kicked, or pushed) than their TD peers. Third, parental reports for adolescents in the HF-

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\(^4\) A Levene’s test of homogeneity of variance was significant for this analysis, $F(1,44) = 15.10, p < .05$, therefore a nonparametric Mann-Whitney test was conducted which confirmed the reliability of this finding, $U = 181.00, Z = 2.33, p < .05$.  

\(^5\) A Levene’s test of homogeneity of variance was significant for this analysis, $F(1,44) = 45.99, p < .05$, therefore a Mann-Whitney test was conducted which confirmed the reliability of this finding, $U = 171.50, Z = 2.84, p < .05$.  

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ASD and ADHD/LD groups were more in agreement with their child’s experiences of bullying than parental reports obtained for TD adolescents.

The elevated rates of victimization experienced by adolescents with HF-ASD may reflect some of the salient features of the disorder. The defining features of ASD include impairment in social interaction and communication and repetitive or stereotyped behaviors (APA, 2000). Humphrey and Symes’ (2011) have presented the reciprocal effects peer interaction model (REPIIIM), which clearly illustrates how features central to the disorder can lead to victimization for those with an ASD. In support of this model, victimization in ASD has been associated with social vulnerability (Sofronoff et al., 2011), communication difficulties, having fewer friends, and self-injurious/restricted behaviors, (Cappadocia et al., 2012). Our finding that significantly more adolescents with HF-ASD reported being victimized than their TD peers is consistent with previous research (Little, 2002; Montes & Halterman, 2007; Symes & Humphrey, 2010; Van Roekel et al., 2010; Wainscot et al., 2008) where diverse types of methodology have been employed (e.g., self-reports, interviews, parental reports, teacher reports, observations). In addition, our finding that adolescents with HF-ASD were socially excluded by their peers on purpose is consistent with the work of Humphrey and Symes (2011) who found that in contrast to a group of students with dyslexia and a control group of TD peers, the students with ASD spent more time alone, and less time interacting with their TD peers.

Although the current study found adolescents with HF-ASD to be at greater risk of victimization, no differences between the three groups of adolescents were found for bullying others. This finding is consistent with Monte and Halterman (2007) who found that the rate of bullying others by children with ASD without comorbid ADHD to be comparable to the general population. Given Rowley et al. (2012) and Van Rocket et al. (2010) did not control
for ADHD characteristics, the elevated rates of ASD children bullying others reported by these researchers are likely due to features central to ADHD. On the other hand, it is possible that the adolescents in our sample were reluctant to self-report bullying others in fear of this information being disclosed to school officials; however, we do not feel this was the case as parents’ reports of bullying others were consistent with their children’s.

When comparing groups across the types of victimization experienced, the current study found that adolescents with HF-ASD reported experiencing more physical victimization than the control group, but not the LD/ADHD group. This finding may be a reflection of gender differences. For example, the current research only included boys; it has been consistently found that boys participate in physical bullying more than girls (Crick & Grotpeter, 1995). Girls tend to be more involved in indirect forms of bullying than boys which might explain why no differences were found in the current research between the groups for “spreading rumors” or “telling lies”. On the other hand, the elevated rates of physical bullying reported by the adolescents with ASD and ADHD/LD may be because they are seen by their perpetrator(s) as being different, and/or as physically weak. For example, those with ASD and ADHD have been found to have difficulties with motor movement and are seen by others as being awkward and/or clumsy (Pan, Tsai, & Chu, 2009). In line with this, poor gross motor skills have been found to contribute to the risk of being bullied during childhood (Bejerot, Edgar, & Humble, 2010). It is not clear whether difficulties with motor movements contribute to the physical victimization experienced by adolescent boys with ASD and future research is warranted.

One key finding in the current study was that parents with a child with HF-ASD or LD/ADHD were consistent with their child in reporting across all types of bullying behaviors. This suggests that parents of adolescents with special needs are attentive as to
whether their child has been bullied and/or if their child bullies others. Consistent with Mishna et al.’s (2006) findings, we found that parents of TD adolescents had lower agreement with their child when reporting whether their child had been called mean names/made fun of/teased, or whether their child had bullied another student in this way. Although relationships with parents remain important in adolescence, during this developmental period, TD adolescents spend more time with peers sharing information and less time with family (Larson, Richards, Moneta, Holmbeck, & Duckett, 1996). However, due to their difficulties with social interaction and communication, adolescents with ASD report having few, if any, close friends with whom to share information (Cappadocia et al., 2012; Koning, & Magill-Evans, 2001) and consequently may be more likely to confide in their parents, disclosing their experiences with bullying behavior. In many cases family members are often involved in helping their child with ASD to form and maintain friendships (Howard et al., 2006); thus, an additional explanation may be that parents of adolescents with ASD monitor their child’s behavior more closely than parents of TD children, and as a result are more aware of their child’s social interactions with peers. These findings highlight the importance of including parents and other family members in bullying prevention and intervention programs.

Limitations of the current study should be noted. First, we had a relatively small sample size, although the medium to large effect sizes confirm the robustness of our findings. Second, we included only adolescent boys in our sample; there may be differences in the experiences of bullying behavior by girls with ASD that need to be explored. Third, we focused on high functioning adolescents with ASD; therefore our findings may not be generalized to those with ASD who are lower-functioning. Thus, further research to determine whether the level of risk for bullying behavior differs among types of ASD is
warranted. Last, we excluded adolescents with HF-ASD with a comorbid diagnosis of ADHD from the study; however, it is possible that many of the adolescents with HF-ASD who participated in our study may have had ADHD-related symptoms; not officially diagnosed. A number of overlapping features have been found between ADHD (combined type) and ASD, including attention deficit and hyperactivity (APA, 2000; Mayes, Calhoun, Mayes, & Molitoris, 2012), and the estimated prevalence of comorbidity of ADHD in ASD has been shown to range from 45% to 87% (Ames & White, 2011). Despite these limitations, our findings clearly indicate that adolescent boys with HF-ASD are socially more excluded and experience more victimization than their TD peers, most notably in the form of physical bullying. Future research which extends our understanding of bullying behavior experienced by adolescents with HF-ASD is crucial given the epidemiological studies that indicate the prevalence of ASD continues to be on the rise (Saracino, Noseworthy, Steiman, Reisinger, & Fombonne, 2010), resulting in an increased number of HF-ASD adolescents being mainstreamed in middle and secondary schools (Yazbak, 2003). As next steps, educators and researchers need to concentrate on the development, implementation, and assessment of bullying intervention and prevention programs for this SN population. It is concluded that in order to be effective, these programs should focus on the student with ASD (e.g., provide strategies for improving communication and social interaction), school community (e.g., awareness of ASD for peers), and home environment (e.g., parental awareness and education regarding bullying and victimization).
2.6 References


Available on-line:

http://www.melissainstitute.org/documents/MakingADifference.pdf


Rowley, E., Chandler, S., Baird, G., Simonoff, E., Pickles, A., Loucas, T., & Charman, T.


with peers and use of the school environment of mainstream secondary school pupils with Asperger syndrome (high-functioning autism): A case-control study. 


Table 2.1. Percentage of involvement in bullying behavior across groups by item

<table>
<thead>
<tr>
<th>Forms</th>
<th>Items</th>
<th>ASD (N = 24)</th>
<th>LD/ADHD (N = 22)</th>
<th>Controls (N = 24)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bullied</td>
<td>Bullied Others</td>
<td>Bullied Others</td>
<td>Bullied Others</td>
</tr>
<tr>
<td>Physical</td>
<td>Hit, kicked, pushed, showed around, or locked indoors</td>
<td>29.2</td>
<td>14.3</td>
<td>9.1</td>
</tr>
<tr>
<td>Verbal</td>
<td>Called mean names, made fun of, or teased in a hurtful way</td>
<td>41.7</td>
<td>16.7</td>
<td>40.9</td>
</tr>
<tr>
<td></td>
<td>Bullied with mean names and comments about race or colour</td>
<td>12.5</td>
<td>8.3</td>
<td>9.1</td>
</tr>
<tr>
<td></td>
<td>Bullied with mean names and comments about religion</td>
<td>16.7</td>
<td>4.2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Bullied with sexual jokes, comments, or gestures</td>
<td>29.2</td>
<td>4.2</td>
<td>22.7</td>
</tr>
<tr>
<td>Relational</td>
<td>Excluded from a group of friends or was completely ignored</td>
<td>45.8</td>
<td>14.3</td>
<td>27.1</td>
</tr>
<tr>
<td></td>
<td>Told lies or spread false rumours</td>
<td>33.3</td>
<td>4.2</td>
<td>18.2</td>
</tr>
<tr>
<td>Cyber</td>
<td>Bullied using a computer or e-mail messages or pictures</td>
<td>12.5</td>
<td>8.3</td>
<td>4.5</td>
</tr>
<tr>
<td></td>
<td>Bullied using a mobile phone</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

ASD = Autism Spectrum Disorder; LD/ADHD = Learning Disorder; Attention Deficit Hyperactivity Disorder
Figure 2.1. Means and standard deviations for types of victimization experienced by adolescents within the last two months. Significant group differences indicated for social isolation and physical victimization.

\[ a \] difference between ASD & Control group, \( p < .05 \)

\[ b \] difference between ASD & LD/ADHD group, \( p < .05 \)
Foreword to Chapter 3

Chapter 3 consists of a manuscript that has been published by the journal entitled “Research in Autism Spectrum Disorders”. Chapter 3 adheres to APA format. Dr. Elizabeth Kelley, Dr. James Parker, and Dr. Wendy Craig, appear as co-authors on the manuscript.
Chapter 3:

Executive Functioning as a Predictor of Peer Victimization in Adolescents

with and without an Autism Spectrum Disorder

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3.1 Abstract

The present study examined pragmatic language and executive functions (EF) as predictors of peer victimization in three groups: high-functioning adolescent boys with an Autism Spectrum Disorder (ASD) ($n = 30$); typically developing adolescent boys ($n = 40$); and adolescent boys ($n = 22$) without ASD with special education needs (SN). Controlling for age and bullying others, regression analyses revealed EF as measured by the Behavior Rating Inventory of Executive Functioning (Gioia et al., 2000) to be a significant predictor across all types of peer victimization (physical, social, and verbal) regardless of group membership. It is concluded that EF may play a role in explaining why some SN adolescents with and without ASD are at-risk of peer victimization.
3.2 Introduction

Over the last three decades Autism Spectrum Disorders (ASD) has become one of the most widely studied disorders of childhood. ASD, which until very recently\(^6\) included autistic disorder, Asperger’s syndrome, and Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS), all share the essential features of qualitative impairment in social interaction and communication, and restricted and repetitive patterns of behavior [American Psychiatric Association (APA), 2000]. An emerging body of research strongly suggests that children and adolescents with ASD are at greater risk of being bullied than their typically developing (TD) peers (Kloosterman, Kelley, Craig, Parker, & Javier, 2013; Little, 2002; Humphrey & Symes, 2010, 2011; Wainscot, Naylor, Sutcliff, Tantam, & Williams, 2008). What is less clear however, are the factors that contribute to the elevated risk of peer victimization in this population. Pragmatic language and executive functioning are two factors linked with social functioning in both TD individuals and individuals with ASD (Gilotty, Kenworthy, Sirian, Black, & Wager, 2002; Jacobson, Williford, & Pianta, 2011; McKown, Gumbiner, Russo, & Lipton, 2009; Oerlemans et al., 2013; Reichow, Salamack, Paul, Volkmar, & Klin, 2008). The present study sought to examine relationships among pragmatic language, executive functioning and peer victimization.

Although definitions of peer victimization vary in the literature, most include three common characteristics: 1) the act is performed with the intent of causing harm, 2) it is repeated over time, and 3) there is an imbalance in power between those involved (Craig & Pepler, 2003). There are various types of peer victimization, most often categorized as physical, verbal, and relational. Physical victimization is most obvious and includes kicking, pushing, punching, assaulting or beating the victim, whereas verbal victimization includes the psychological

\(^6\) In the recently published DSM-V, autistic disorder, Asperger’s syndrome, and PDD-NOS have been collapsed into one “autism spectrum disorder” with one set of defining criteria (APA, 2013).
attributes of repeated name calling, teasing, and/or making derogatory remarks. Relational victimization is considered a form of social aggression because it interferes with the social relationships between the victim and his or her peers (i.e. excluding individuals from group activities; being humiliated in front of others). This form of peer victimization appears to be more common than physical victimization and has been observed quite early in life with preschool children (Crick et al., 2006).

Research with TD adolescents has shown that those individuals who bully others are more likely to have externalizing problems, such as substance abuse and delinquency (Kaltiala-Heino, Rimpela, Rantanen, & Rimpela, 2000; Sourander et al., 2006); on the other hand a constellation of internalizing behaviors (i.e. poor self-esteem, shyness, depression, anxiety, loneliness) have been linked to victimization (Craig, 1998; Dyer & Teggart, 2007; Holt, Finkellhor, & Kantor, 2007; Jantzer, Hoover, & Narloch, 2006; Klomek, Marrocco, Kleinman, Schonfeld & Gould, 2007; Kumpulainen, Rasanen, & Puura, 2001; Olweus, 1997).

Levels of peer victimization appear to vary depending on age and grade of individuals. In the bullying literature, the transition from elementary to secondary school has received much attention as it is during this time that bullying behavior peaks (Nansel et al., 2001; Pepler et al., 2006; Sumter, Baumgartner, Valkenburg, & Peter, 2012). Cross sectional studies indicate that this peak in bullying behavior is followed by decreased rates by the end of secondary school (e.g., Pepler et al., 2006). However, longitudinal research has shown that for a small portion of adolescents bullying behavior remains stable and persists across the secondary school years.

3.21 Experiences with Bullying in Individuals with ASD

In the first published empirical study on experiences with bullying in ASD, Little (2002) surveyed 411 mothers of children with ASD and/or a non-verbal learning disability and reported that 94% of the children had been bullied by a peer at least once in the past year; when compared
to a national internet sample of TD children, the children with ASD were four times more likely to experience peer victimization. In a subsequent study, Wainscot et al., (2008) interviewed 30 adolescents with ASD and found that they experienced almost three times more peer victimization than their TD peers. As well, 40% of the adolescents with ASD in Wainscot et al.’s study reported that they experienced peer victimization on a daily basis, whereas only 14.8% of the TD adolescents reported this same frequency of occurrence. Additionally, Humphrey and Symes (2010) reported that adolescents with ASD experienced significantly more peer victimization in the form of peer rejection than TD adolescents or adolescents with dyslexia. Kloosterman, et al. (2013) found that adolescents with ASD were more likely to be physically bullied and experienced more social isolation than their TD peers. Although these findings clearly highlight an elevated risk of peer victimization for children and adolescents with ASD, little empirical research has been conducted to determine why this population may be at risk. It is not clear, for example, whether factors associated with social functioning may contribute to some types of peer victimization more so than others. To the best of our knowledge, the present study is one of the first to examine the association between social-cognitive factors (pragmatic language and executive functioning) and types of peer victimization experienced by adolescent boys with ASD.

3.22 ASD and Elevated Risk for Victimization

It has been suggested that individuals with ASD are more vulnerable to peer victimization due to their impairments in communication and social interaction (Fisher, Moskowitz, & Hadapp, 2013; Heinrichs, 2003; Humphreys & Symes, 2011; Volkmar & Klin, 2000). For example, Cappadocia et al. (2012) examined the relationship between peer victimization and social skills deficits and communication difficulties in a sample of 192 youth with ASD. Using data from parental reports, youth were classified according to level of peer
victimization (victimized versus not victimized). It was found that those who were victimized were approximately 5 times more likely to have greater communication difficulties than those who were not. No difference was found between the two groups for deficits in social skills, although the youth who were victimized had significantly fewer friends than those who were not. Fisher et al. (2013) also used parental reports to compare social vulnerability and experiences of peer victimization with a group of individuals with ASD to those with William’s syndrome, or Down syndrome. The three groups did not differ significantly in the rates and types of peer victimization experienced; however, those with ASD were found to have a diminished peer network with only 50% of the parents reporting that their child had a friend. In addition, those with ASD were rated as having significantly more difficulty than the other two groups in reading social cues (e.g. facial expressions). It is worth noting that both Cappadocia et al. (2012) and Fisher et al. (2013) lacked a TD control group and their findings were based entirely on parental reports. Research with TD adolescents has found that parents are not always aware of the peer victimization experienced by their child/children (Mishna, Pepler, & Weiner, 2006; Sawyer, Mishna, Pepler, & Weiner, 2011). The present study addressed this issue by asking adolescents to self-report their experiences regarding peer victimization.

To better understand why children and adolescents with ASD are at greater risk of peer victimization than their TD peers, Humphreys and Symes (2011) proposed the reciprocal effects peer interaction model (REPM). The REPM suggests that difficulties in social cognition lead to poor social and communication skills. As a consequence, students with ASD fail to develop positive relationships with their peers. A lack of awareness and acceptance of the disorder by their TD peers further hinders the building of quality relationships for ASD students. The end results are ASD students with few, if any, friends. With a diminished social network, ASD students are more vulnerable to social rejection and peer victimization. Although many
researchers and clinicians agree that difficulties in social interaction, a core feature of the REPIM, add to the elevated risk of peer victimization seen in this population, little systematic research has been conducted to identify specific factors that may underlie such difficulties. Identification of underlying factors that lead to social skills deficits would be helpful for clinicians and educators to target intervention goals and strategies at the child level for both those with and without ASD.

Two factors that have been associated to social skills in both TD and ASD populations are pragmatic language and executive functioning (Gilotty et al., 2002; Jacobson et al., 2011; McKown et al., 2009; Oerlemans et al., 2013; Reichow et al., 2008). For the current study, it is hypothesized that the elevated risk of peer victimization for individuals with ASD is a consequence of impairments in pragmatic language and executive functioning. These impairments lead to maladaptive social skills that in turn produce diminished peer networks, increased social isolation, and an increased vulnerability to peer victimization.

3.2.3 Pragmatic Language Difficulties in ASD

Research on ASD has linked difficulties in social interaction and communication to a deficit in language abilities, most notably pragmatic language (Capps, Kehres, & Sigman, 1998). Pragmatic language refers to the use of language socially to achieve a purpose and is related to the understanding of subtle social and linguistic cues (e.g., knowing the rules for taking turns and the style and tone of speech appropriate for different listeners when conversing; interpreting the meaning of gestures and facial expressions). Although individuals with ASD may be able to verbalize words and construct grammatically correct sentences, they often struggle in initiating and maintaining conversations. Their lack of awareness about the social rules of language is considered one reason for such difficulties in discourse (Kelley, Paul, Fein, & Naigles, 2006). Individuals with ASD have difficulties in interpreting nonliteral uses of language, such as jokes.
and metaphors (Martin & McDonald, 2004; Mitchell, Saltmarsh, & Russell, 1997), as well as sarcasm and figures of speech (Happé 1995; Jolliffe & Baron-Cohen, 1999) - difficulties which can lead to the misunderstanding of communicative intent and interpersonal problems. Given their difficulty with understanding these aspects of pragmatic communication, individuals with ASD may not know how to act or what to say in unstructured situations such as the playground or the lunchroom and as a result they may be ridiculed and/or exploited by their peers.

3.24 Executive Functioning in Individuals with ASD

Although not part of diagnostic criteria, deficits in executive functioning (EF) have long been noted in children and adolescents with ASD (Pennington & Ozonoff, 1996). The construct of EF refers to the processes necessary for the attainment of future goals (Welsh & Pennington, 1988). It embraces a number of skills involving mental control and self-regulation of behavior and emotions that include planning, inhibition, organization, cognitive flexibility, emotional control, self-monitoring, initiation, and working memory.

Over the past two decades, various studies have examined EF in ASD; however, comparisons across studies are problematic, since the range of EF domains under study has varied greatly, as has the variety of performance-based and rating measures for the EF domains (for a review see Hill, 2004). Performance-based measures of EF often differ from rating measures. For example, performance-based measures of EF are more likely to indicate how efficient an individual can process information (the algorithmic mind), whereas rating measures, such as parental reports, provide information regarding how efficient the individual is in pursuing individual goals and problem-solving (the reflective mind) in everyday situations (Toplak, West, & Stanovich, 2013). Toplak et al. suggest that rating measures of EF assess issues regarding rational control, “which refers to behavior in the real environment that serves to foster goal achievement” (p. 137). Because peer victimization has been associated with poor problem-
solving abilities (Cassidy, 2009) and occurs in everyday life across various situations, the present study employed the Behavior Rating Inventory of Executive Function (BRIEF; Gioia, Isquith, Guy, & Kenworthy, 2000). The BRIEF is a rating measure of EF that focuses on observational reports of overt behavior in children and adolescents by parents and/or caregivers.

Using parental reports, it has been shown that individuals with ASD have deficits across multiple EF domains. For example, Zandt, Prior, and Kyrois (2009) used the BRIEF (Gioia et al., 2000) to compare parental reports of adolescents with ASD to a group of TD adolescents and found that the ASD group had significantly poorer abilities across all EF domains, especially for shifting attention. Kenworthy, Black, Harrison, della Rosa, and Wallace (2009) also used the BRIEF to examine EF in a group of 89 children with ASD. Controlling for age and vocabulary, the scale’s Behavioral Regulation Index (BRI) was found to be significantly related to each of the disorder’s defining criteria: impairments in social interactions and communication, and repetitive and ritualistic patterns of behaviors. The Metacognition Index (MI) was significantly related to impairments in social interactions. In addition, the mean standardized scores for both parent and teacher reports for total EF were found to be in the clinically significant range ($t \geq 65$).

The BRI from the BRIEF measures a child’s ability for inhibition, shifting attention, and emotional control, while the MI measures more sophisticated abilities of EF including initiation, working memory, planning, organizing materials and monitoring. As pointed out by Gioia et al. (2000), behavior regulation can be considered an antecedent of metacognition, as it sets the foundation for effectively guiding problem solving and planning abilities. Thus, deficits in the ability to cognitively switch from one situation or activity to the next, controlling one’s impulses, and regulating one’s emotions can ultimately lead to deficits in the ability to initiate, plan,
organize and maintain “future-oriented problem solving in working memory” (Gioia et al., 2000, p. 20).

Conceptually, it is possible that the three behavioral regulation abilities measured by the BRIEF are both directly and indirectly related to peer victimization. Directly, individuals with ASD who are unable to inhibit or control their behavior may find themselves in a vulnerable situation or participate in behaviors that increase their chances of peer victimization. For example, they may display impulsive behaviors (e.g., speaking out of turn, interrupting others, not following rules, making inappropriate noises or gestures) that their peers find disruptive and/or annoying and which increase their risk of peer victimization (see Rose, Monda-Amaya, & Espelage, 2011). Once in this negative situation individuals with ASD cannot shift or focus their attention where needed. Their lack of emotional regulation results in a response to the peer victimization (e.g., fear or anger) that the perpetrator finds rewarding, and as a result it is repeated. Indirectly, deficits in behavioral regulation may contribute to poor planning and problem solving abilities - skills needed to generate an adaptive social response when faced with a demanding situation.

Difficulties in EF offer a novel explanation as to why adolescents with ASD are at greater risk of peer victimization than their TD peers. Although such difficulties have been associated with aggressive behavior and bullying others in TD populations (Coolidge, DenBoer, & Segal, 2004), the present study is one of the first to investigate whether such deficits may be predictive of the elevated rates of peer victimization found in adolescents with ASD.

3.25 The Current Study

The present study examined the relationships between pragmatic language, EF, and types of traditional peer victimization with three groups of adolescent boys: those with ASD, those with special education needs (SN) without ASD, and those who were TD. Deficits in pragmatic
language and EF are not exclusive to ASD and have been noted in other childhood disorders including learning disorders (LD) and attention-deficit/hyperactivity disorder (ADHD) (Lapadat, 1991; Leonard, Milich, & Lorch, 2011; Nyden, Gillberg, Hjelmquist, & Heiman, 1999). A SN control group consisting of adolescents with LD and/or ADHD was included in the present study to allow us to determine whether adolescent boys with ASD are victimized more by their peers because of symptoms central to the disorder or because of associated features (e.g., deficits in pragmatic language and EF) shared with other SN populations. Like adolescents with ASD, research has shown that adolescents with LD and/or ADHD are at greater risk of victimization than their TD peers (Mishna, 2003; Weiner & Mak, 2009). It is possible that the underlying mechanisms of pragmatic language and EF may offer an explanation as to why some SN populations are at greater risk of peer victimization than others. Given that pragmatic language and EF have been related to social skills in both TD individuals and those with ASD (Gilotty et al., 2002; Jacobson et al., 2011; McKown et al., 2009; Oerlemans et al., 2013; Reichow et al., 2008), it was expected that both pragmatic language and EF would be predictors of peer victimization across groups.

3.3 Methods

3.3.1 Participants

The sample for this study was comprised of three groups of adolescent boys. The first group consisted of 30 adolescent boys having a diagnosis on the autism spectrum (Asperger’s, \( n = 14 \); PDD-NOS, \( n = 9 \); High-Functioning Autism, \( n = 7 \)). Of the adolescents with ASD, six reported having an additional diagnosis of attention deficit hyperactivity disorder (ADHD)\(^7\). The second group served as a special need (SN) control group and consisted of 13 adolescent boys with a learning disability (LD), 7 with ADHD, and 2 with both LD and ADHD. The third group

\(^7\) Data from adolescents with ASD and a secondary diagnosis of ADHD were omitted and all analyses were re-run. Our findings did not change, thus, these cases were not excluded from the current study.
consisted of 40 typically developing (TD) adolescent boys, without SN, having no diagnosis of ASD or developmental delays. For the full sample ($N = 92$), the boys ranged in age from 11 to 18 years. As displayed in Table 1 the three groups did not differ in age, $F(2,89) = 1.14, p > .05$. All adolescents had an IQ in the average range; however, the adolescents in the TD group demonstrated significantly higher IQs than those in the ASD group and SN group, $p < .05$.

Participants were recruited through three secondary mainstream schools and various non-treatment community organizations in south central Ontario, Canada. Consent was required and received from one parent of each of the boys, and written assent was obtained from the boys themselves. The boys received $10 for each hour of participation in the study, and their family was entered into a raffle for a $50 gift certificate for a local electronics store. Due to the lower prevalence rate of ASD in girls, particularly in the high-functioning ASD population, only boys were recruited for the study. Given that girls and boys differ in their experiences of bullying behavior (Craig & Pepler, 2003), including girls in our sample would also have required us to control for gender, resulting in a reduction of power.

### 3.32 Measures

**Autism Diagnostic Observation Schedule – Generic** (ADOS-G; Lord, Rutter, DiLavore, & Risi, 1989). The ADOS-G is a semi-structured behavioral assessment that can be used to confirm level of autism symptoms for adolescents classified as a diagnosis on the autism spectrum, although it is not designed to distinguish between the different disorders on the autism spectrum. During this assessment, the individual is given one of 4 modules based on his or her expressive language level. The 4th module is used for high-functioning adults and adolescents, thus was employed for this study. Using the ADOS-G, diagnoses were confirmed for all adolescents with ASD.
**Wechsler Abbreviated Scale of Intelligence** (WASI; Wechsler, 1999): The WASI is a standardized test used to assess general intelligence. It contains four subtests (Vocabulary, Block Design, Similarities, Matrix reasoning) which tap various facets of intelligence. Scores on these four subtests yield an estimated full-scale IQ score.

**Bullying/Victimization Questionnaire (BVQ).** Based on the Bully/Victim Inventory (Olweus, 1997) this self-report measure assesses the experiences of being physically, verbally, and relationally victimized, and experiences with bullying others. The questionnaire begins with the following definition of bullying: *We say a student is **BEING BULLIED** when another student, or a group of students, say or do nasty and unpleasant things to him or her. It is also bullying when a student is teased repeatedly in a way he or she does not like or when he or she is deliberately left out of things. But it is **NOT BULLYING** when two students of about the same strength or power argue or fight. It is also not bullying when the teasing is done in a friendly and playful way.* For the current study this definition was read aloud to each of the adolescents before they responded to the questions. The BVQ consists of two parts. In the first part (Part A), the student is first asked to answer a general question: “**How often have you been bullied at school in the past couple of months?**” using the following 5-point rating scale: 0) I have not been bullied in the past couple of months, 1) only once or twice, 2) 3 times a month, 3) about once a week, and 4) several times a week. Using this same rating scale, the student is then asked to give responses to nine statements regarding types of bullying behavior experienced. In the second part (Part B), the general question, statements regarding types of bullying behaviors, and rating scale, are identical to the first part, with the exception that the wording is reversed to reflect bullying others (e.g., “**How often have you bullied others at school in the last couple of months?**”). Physical bullying is measured by one item (hitting, kicking, pushing, shoving around, or locking indoors). Verbal bullying is measured by four items (calling mean names,
making fun of or teasing in a hurtful way, calling mean names about race, calling mean names about religion, and sexual comments/gestures). Social bullying is measured by two items (socially excluding others, and spreading rumors). Electronic bullying is measured by two items (bullying using a computer or e-mail messages or pictures, and bullying using a cell phone). For the types of victimization assessed by more than one item, average scores were calculated and employed for analyses.

**Behavior Rating Inventory of Executive Function** (BRIEF; Gioia et al., 2000). Parents completed the parent-rating form of the BRIEF to measure components of executive functioning in their child. The BRIEF consists of 86 items in which the parent responds whether their child displays problems with a specific behavior: 1 = Never, 2 = Sometimes, or 3 = Often. It contains eight non-overlapping scales reflecting various domains of cognitive function; these scales make up two summary indexes. The Behavioral Regulation Index is comprised of the Inhibit, Shift, and Emotional Control scales, while the Metacognition Index is comprised of the Initiation, Working Memory, Planning, Organization of Materials, and Monitoring scales. Summed together, the Behavioral Regulation Index and the Metacognition Index comprise a Global Executive Composite score. Higher scores indicate poorer EF abilities.

**Comprehensive Assessment of Spoken Language** (CASL; Carrow-Woolfolk, 1999). The CASL is a standardized language instrument developed for use with individuals between the ages of 3 and 21 years. It consists of 15 core and supplemental tests; for the current study, only the Pragmatic Judgment subtest was administered. Split-half reliability for this subtest ranges from .77 to .86 for 12-18 year-olds (Carrow-Woolfolk, 1999). High scores on the Pragmatic Judgment subtest indicated better pragmatic language abilities.
3.33 Procedure

Adolescent boys recruited from the secondary mainstream schools ($n = 15$) underwent testing sessions in a quiet room provided by each of the schools, whereas adolescents recruited through non-treatment community organizations ($n = 75$) completed testing sessions in a lab at one of two neighboring universities. At the request of their parents, two boys completed the sessions in a quiet room in their home. Participants attended 2 to 3 sessions. For the adolescents with ASD, the ADOS-G was administered during the first session to confirm ASD diagnoses. For this group of adolescents, the subsequent sessions involved administering the WASI, CASL, and completion of the Bullying/Victimization questionnaire. The TD adolescents and SN adolescents completed the WASI and Bullying/Victimization questionnaire during the first session and the CASL during the second. For all adolescents, parents were asked to complete the BRIEF. Of the 92 parents, 88 completed this questionnaire. Approval for all procedures was obtained from the institutional review board for human subjects research from both universities involved with this project.

3.34 Data Analyses

Data were analyzed using SPSS for Windows statistical software package, version 17.0. For the first analysis, an ANCOVA (with IQ as a covariate) was utilized to determine if the groups differed on pragmatic language as measured by the Pragmatic Judgment subtest of the CASL. A subsequent ANCOVA (with IQ as a covariate) was utilized to determine if the groups differed on total BRIEF scores. Pearson correlations were conducted to examine the relationships among the variables.\(^8\) Using the full sample, three hierarchical regression analyses\(^9\) were then conducted to determine whether total scores on the BRIEF might predict physical, social, and/or

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\(^8\) Although not included in the published version of this manuscript, Pearson correlations were conducted to examine the relationships between the sub-domains of the BRIEF and types of victimization (see Appendix F).

\(^9\) Logistic regression was considered for these analyses; however, due to an unequal number of participants in each group (e.g., 18 reporting physical victimization within the last couple of months and 70 not reporting this type of victimization) it was decided that hierarchical regression would be better suited.
verbal victimization, controlling for age and bullying others.\textsuperscript{10} \textsuperscript{11} Post-hoc power analyses were conducted for each of the hierarchical regression analyses using G*Power version 3.1. Three additional hierarchical regression analyses were conducted to determine whether total scores on the BRIEF might predict physical, social, and/or verbal bullying of others, with age and peer victimization as covariates.

Three additional hierarchical regression analyses were conducted to determine whether total scores on the BRIEF might predict physical, social, and/or verbal bullying of others, controlling for age and peer victimization. These analyses yielded no significant findings, thus the results are not reported.

3.4 Results

3.4.1 Group Comparisons Pragmatic Language and EF

An ANCOVA revealed group differences on Pragmatic Judgment scores, $F(2,88) = 7.56$, $p < .01$, with IQ as a significant covariate, $F(1,88) = 29.51$, $p < .001$. Follow-up univariate analyses indicated that the ASD group scored significantly lower than both the TD group, $F(1,67) = 11.26$, $p < .01$, $d = 1.03$, and SN group, $F(1,49) = 9.44$, $p < .01$, $d = 0.62$. No difference was found between the TD and SN group on Pragmatic Judgment scores, $F(1,59) = 0.00$, $p > .05$. An additional ANCOVA (controlling for IQ) revealed that the three groups also differed on total BRIEF scores, $F(2,84) = 27.59$, $p < .001$. IQ as a covariate was not significant, $F(1,84) = 0.16$, $p > .05$. Follow-up univariate analyses indicated that the ASD group scored significantly higher on total BRIEF scores than both the TD group, $F(1,66) = 63.81$, $p < .001$, and the SN group, $F(1,48) = 6.94$, $p < .05$, and the SN group scored significantly higher than the TD group, $F(1,57) = 15.56$, $p < .001$. Means and standard deviations are displayed in Table 1.

\textsuperscript{10} Electronic victimization was not included in this set of analyses as the majority of the sample (88\%) did not report this type of victimization.

\textsuperscript{11} Results of additional hierarchical regression analyses using 4 steps, rather than 3, are displayed in Appendix E and do not appear in the published version of this manuscript.
3.42 Executive Function and Types of Victimization

As displayed in Table 2, no relationship was found between Pragmatic Judgment and any type of peer victimization. As a result, pragmatic language was not considered as a predictor of peer victimization in subsequent analyses. However, total BRIEF scores correlated significantly with physical victimization \((r = .32)\); verbal victimization \((r = .23)\) and social victimization \((r = .34)\). IQ did not correlate with any type of peer victimization or total BRIEF scores.

To determine whether the relationships between executive functioning and types of peer victimization were moderated by group membership, three hierarchical regression analyses were conducted. Interaction terms were first constructed between total BRIEF scores and group membership for the ASD and SN (LD and/or ADHD) groups. Prior to constructing the interaction terms, total BRIEF scores were centered by subtracting the variable mean from each score to address any problems of multi-collinearity (Aiken & West, 1991). Group membership was dummy-coded into two variables. For the first variable, ASD was coded as “1” and all other group memberships were coded as “0”. For the second variable, SN was coded as “1” and all other group memberships were coded as “0”. The dummy-coded variables were not centered based on the recommendations of Jaccard and Turrisi (2003). The possible interactions between group membership and total BRIEF scores (EF), for each of the three regressions, were of major interest.

In the first regression analysis, using physical victimization as the dependent variable, age and bullying others were entered in step 1 as covariates. As shown in Table 3, bullying others was a significant covariate, but not age. This step accounted for 8% of the total variance. In step 2 groups (ASD and SN) and total BRIEF scores were entered together. This produced a significant increment in the amount of variance, accounting for an additional 8.5%. In this step,
total BRIEF scores emerged as a unique predictor of physical victimization and age, but bullying others did not emerge as a significant covariate. In the last step, the two interaction terms (total BRIEF scores X ASD; total BRIEF scores X SN) were entered into the equation. The entry of the interaction terms did not improve the model, nor did they emerge as significant predictors of physical victimization. During this step total BRIEF scores remained a unique predictor and age remained a significant covariate.

For the second regression analysis, with social victimization as the dependent variable, the same covariates/predictors were entered in the same order as for the first regression. In the first step, bullying others emerged as a significant covariate, but not age. This step accounted for 13.2% of the total variance. In the second step, entry of the two groups and total BRIEF scores contributed an additional 8.2% to the total variance, significantly improving the model. In this step only total BRIEF scores emerged as a significant predictor of social victimization and bullying others remained a significant covariate. In the last step, the entry of the two interaction terms did not significantly improve the model, nor did they emerge as significant predictors of social victimization. During this step total BRIEF scores as a predictor remained significant and bullying others remained a significant covariate (see Table 4).

For the third regression analysis, with verbal victimization as the dependent variable, the same covariates/predictors were entered in the same order as in the previous 2 regression analyses. In the first step, bullying others emerged as a significant covariate, but not age. This step accounted for 20.2% of the total variance. In the second step, entry of the two groups and total BRIEF scores added an additional 1.1% of the total variance. In this step, total BRIEF scores emerged as a unique predictor of verbal victimization, just reaching significance ($p = .05$). In the last step, the entry of the two interaction terms did not significantly improve the model, nor did they emerge as a unique predictor of verbal victimization. During this step total BRIEF
scores remained a unique predictor of verbal victimization and bullying others remained a significant covariate (see Table 5). Post-hoc power analyses were conducted which indicated that all three hierarchical regressions had adequate power for the first two steps (> .80), but not the third (< .80).

3.5 Discussion

In the current study EF was found to be a unique predictor of physical, social, and verbal peer victimization, with lower EF abilities being related to higher amounts of peer victimization. Although deficits in pragmatic language were greatest for the adolescents with ASD, compared to their SN and TD peers, they were not related to any type of peer victimization.

The main finding of the current study was that total scores on the BRIEF uniquely predicted all three types (physical, social, and verbal) of peer victimization while controlling for age and bullying others. This finding is important as it suggests that EF plays a role in the peer victimization experienced by adolescents with ASD, as well as adolescents without ASD but with other SN. Due to our small sample size we only used total BRIEF scores in our analyses as a predictor of EF across the types of peer victimization. However, it is possible that deficits in some EF abilities may be related more so to peer victimization than others, especially for adolescents with ASD who were found to have significantly more deficits in EF than their SN and TD peers. Although limited, there is evidence to suggest that the EF domain of emotional control may help in explaining why adolescents with ASD are at greater risk for peer victimization than their TD peers. For example, children with ASD have been found to have more difficulties in regulating their emotions and experience more negative emotions than their TD peers (Ashburner, Ziviani, & Roger, 2010; Capps, Kasari, Yirmiya, & Sigman, 1993). Due to their emotional displays, adolescents with ASD may be seen by their TD peers as being socially incompetent and as a result they are ignored or rejected. It is worth noting that difficulties in
regulating emotions and the use of maladaptive coping strategies have been associated with chronic victimization in TD children (Wilton, Craig, & Pepler, 2000; Rosen, Milich, & Harris, 2009). Self-regulation of emotions has received very little attention by researchers in the ASD literature and it is an important area for future research. In one of the few studies in this area, Ashburner, Ziviani, and Rodger (2010) examined teachers’ perceptions of emotional and behavioral regulation in 28 high-functioning children with ASD. They found that more than half of the children were rated as having clinically significant problems in regulating their own emotions. The findings of Rieffe et al. (2012) indicate that feelings of anger, but not fear, are linked to the bullying behavior experienced by adolescents with ASD; however, it is not understood whether anger is associated with specific types of victimization. Clearly, more research is needed to further our understanding of the relationship between regulating emotions and bullying behavior in ASD populations.

In the current study we found EF to be a significant predictor of peer victimization; however, it is possible that impairments in social skills and/or social interaction might mediate this relationship. Notably, an association has been found between EF and social skills with both TD and ASD populations (Gilotty et al., 2002; Jacobson et al., 2011). As well, Doren, Bullis, and Benz (1996) found that adolescents with disabilities (physical and mental) who exhibited serious emotional disturbances and a lack of social skills, were more likely to experience peer victimization that those with emotional disturbances and good social skills. Further, Kenworthy et al. (2009) found in a sample of children with ASD that scores on both the Behavior Regulation Index and Metacognition Index of the BRIEF were related to impairments in social interaction. Future research is needed to explore whether a lack of social skills and/or difficulties in social interaction may mediate the relationship between EF and peer victimization for SN adolescents with and without ASD.
Although deficits in EF emerged as a unique predictor of peer victimization, the current study did not find an association between EF and any form of bullying others. This inconsistency with previous research (Coolidge et al., 2004) is likely due to a lack of variance, as very few of the adolescents in our sample reported bullying others (for percentages of bullying others across groups see Kloosterman et al., 2013). It is possible that the adolescents in our sample were reluctant to self-disclose whether or not they bullied others in fear of this information being disclosed to school officials and/or parents, even though they were assured confidentiality during the testing sessions.

Our finding that adolescents with ASD had poorer abilities in pragmatic language than their TD peers concurs with prior research (Capps et al., 1998; Kelley et al., 2006). Unexpectedly, pragmatic language was not related to peer victimization. This result may be due to the reduced sensitivity of the Pragmatic Judgment subtest of the CASL to fully assess all facets of pragmatic language. While this subtest assesses one’s knowledge and use of pragmatic rules and the ability to judge when these rules should be appropriately used, it does not assess one’s understanding of metaphors or such things as ambiguous sentences, sarcasm, or beginning and/or maintaining a conversation. Another explanation for the lack of a relationship between pragmatic language and peer victimization is that high-functioning individuals with ASD have been found to perform well on standardized, structured tests of pragmatic language. However, in daily living where social interactions are not structured, these individuals often have difficulties (Volden, Coolican, Garon, White, & Bryson, 2009; Young Diehl, Morris, Hyman, & Bennetto, 2005). While the ASD adolescents in our sample performed significantly poorer than the TD adolescents on the CASL Pragmatic Judgment subtest, it should be noted that their standard scores were within the normal range.
One limitation of the present study is that only adolescent boys were included our findings may not be generalizable to girls with or without ASD. TD boys and girls have been shown to differ in the types and frequencies of bullying experienced (Craig & Pepler, 2003). Also, we included only high-functioning adolescent boys with ASD in our sample who could reliably self-report, so our results may not be generalizable to adolescent boys with ASD with a below-average IQ. However, by including only high-functioning adolescents with ASD, we were able to control for the effects that intellectual ability may have on peer victimization. A further limitation is that statistical power for the last step in each of our regression analyses was less than adequate. Although we did not find that group (ASD) moderated the relationship between EF and types of peer victimization, it is possible that this lack of finding might be due to a reduction in statistical power given our sample size and the number of covariates/predictors used. Despite these limitations, findings from the present study are useful for furthering our understanding of peer victimization experienced by SN adolescent boys with and without ASD.

The relationship found in the present study between EF and peer victimization is an important indicator for the development of effective bullying prevention and intervention programs for SN adolescents with and without ASD. While numerous universal bullying programs have been developed (see Orpinas & Horne, 2006), it has been suggested that multi-level interventions are needed in schools (Whitted & Dupper, 2005). Such interventions should be implemented at the school, classroom, and individual level. At the individual level, our findings highlight the importance of providing strategies for improving EF abilities in bullying prevention and intervention programs.

The current research tested a single facet (social cognition) of the REPIM model (Humphreys & Symes, 2011), designed specially for children and adolescents with ASD; however, Kochenderfer-Ladd, Ladd, and Kochel (2009) have developed a much broader model
that not only provides a framework for future research, but also outlines a number of child and environmental factors that should be considered when developing bullying prevention and intervention programs for SN adolescents with and without ASD. Although this model was not designed specifically for adolescents with SN, conceptually it furthers our understanding as to why some SN populations have a heightened risk for peer victimization. Kochenderfer-Ladd et al. include in their model a number of child factors that can contribute to peer victimization consisting of social behaviors, emotional reactivity, social cognition, and psychosocial vulnerability. Environmental factors in their model include parenting practices, schools and teachers, and peer culture. Research in understanding why some children and adolescents with SN are at greater risk of victimization than their TD peers is in its youth, and Kochenderfer-Ladd et al.’s model suggests multiple avenues for future research in ASD and other SN populations that may contribute to efficient prevention and intervention bullying programs.

The findings of the present study suggest that difficulties in EF may play a critical role in identifying SN adolescents with and without ASD at risk for peer victimization. Early identification of peer victimization experienced by SN adolescents with and without ASD is important for preventing the detrimental consequences of such behavior. For example, it has been found that children and young adolescents with ASD who experience some type of victimization are over 10 times more likely to display higher internalizing behaviors associated with mental health problems than those who are not (Cappadocia et al., 2011). Although it is clear that children and adolescents with ASD are at risk of peer victimization, further research is needed to examine additional child and environmental factors that might contribute to the elevated risk seen in this and other SN populations.
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Table 3.1  *Mean(M) scores and standard deviations (SD)*

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<td><em>M (SD)</em></td>
<td><em>M (SD)</em></td>
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<td>Pragmatic Judgment $^{a,b}$</td>
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<td>BRIEF – Total Scores $^{a,b,c}$</td>
<td>72.10 (10.65)</td>
<td>63.42 (11.87)</td>
<td>51.87 (9.96)</td>
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BRIEF = Behavior Rating Inventory of Executive Function; ASD = Autism Spectrum Disorder; SN = Special Education Needs; TD = Typically Developing; $^a$ = Significant difference between ASD and TD; $^b$ = Significant difference between ASD and SN; $^c$ = Significant difference between SN and TD.
Table 3.2 Correlation matrix of IQ, pragmatic judgment, executive function, and types of victimization (N = 88)

<table>
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<tr>
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<td>.34**</td>
<td>.77**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>6. Verbal Victimization</td>
<td>-.06</td>
<td>-.05</td>
<td>.22*</td>
<td>.63**</td>
<td>.77**</td>
<td>-</td>
</tr>
<tr>
<td>7. Electronic Victimization</td>
<td>.00</td>
<td>.03</td>
<td>.07</td>
<td>.17</td>
<td>.25*</td>
<td>.38**</td>
</tr>
</tbody>
</table>

Note. BRIEF = Behavior Rating Inventory of Executive Function; * = p < .05; ** = p < .01

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12 A revised version of this table (not included in the published version of this manuscript) includes age and bullying others (see Appendix G).
Table 3.3 *Summary of hierarchical regression analysis for the effects of scores on the Behavior Rating Inventory of Executive Function Inventories (BRIEF) on physical victimization.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>β</th>
<th>Semi-Partial Correlations</th>
<th>AdjR²</th>
<th>AdjΔR²</th>
<th>ΔF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.081</td>
<td>-.192</td>
<td>.080</td>
<td>.080</td>
<td>4.78*</td>
</tr>
<tr>
<td>Bullying Others*</td>
<td>.603</td>
<td>.250</td>
<td></td>
<td></td>
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<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age*</td>
<td>-.097</td>
<td>-.229</td>
<td>.165</td>
<td>.085</td>
<td>3.87*</td>
</tr>
<tr>
<td>Bullying Others</td>
<td>.464</td>
<td>.189</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASD Group</td>
<td>.096</td>
<td>.041</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SN Group</td>
<td>-.181</td>
<td>-.083</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total BRIEF Scores*</td>
<td>.017</td>
<td>.223</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age*</td>
<td>-.092</td>
<td>-.214</td>
<td>.159</td>
<td>-.006</td>
<td>0.71</td>
</tr>
<tr>
<td>Bullying Others</td>
<td>.430</td>
<td>.174</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASD Group</td>
<td>.035</td>
<td>.014</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SN Group</td>
<td>-.102</td>
<td>-.044</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total BRIEF Scores*</td>
<td>.017</td>
<td>.223</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASD X Total BRIEF Scores</td>
<td>.021</td>
<td>.117</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SN X Total BRIEF Scores</td>
<td>.007</td>
<td>.038</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Note. *p < .05

ASD = Autism Spectrum Disorders; SN = Special Education Needs
Table 3.4 Summary of hierarchical regression analysis for the effects of scores on the Behavior Rating Inventory of Executive Function Inventories (BRIEF) on social victimization.

<table>
<thead>
<tr>
<th>Variable</th>
<th>$\beta$</th>
<th>Semi-Partial Correlations</th>
<th>$\text{Adj}R^2$</th>
<th>$\text{Adj}\Delta R^2$</th>
<th>$\Delta F$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.071</td>
<td>-0.147</td>
<td>0.132</td>
<td>0.132</td>
<td>7.62**</td>
</tr>
<tr>
<td>Bullying Others**</td>
<td>1.00</td>
<td>0.359</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.087</td>
<td>-0.176</td>
<td>0.214</td>
<td>0.082</td>
<td>3.93*</td>
</tr>
<tr>
<td>Bullying Others**</td>
<td>0.834</td>
<td>0.293</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASD Group</td>
<td>-0.133</td>
<td>-0.049</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SN Group</td>
<td>-0.301</td>
<td>-0.119</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total BRIEF Scores**</td>
<td>0.024</td>
<td>0.275</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.081</td>
<td>-0.163</td>
<td>0.224</td>
<td>0.010</td>
<td>1.54</td>
</tr>
<tr>
<td>Bullying Others**</td>
<td>0.777</td>
<td>0.271</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASD Group</td>
<td>-0.200</td>
<td>-0.066</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SN Group</td>
<td>-0.165</td>
<td>-0.062</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total BRIEF Scores**</td>
<td>0.024</td>
<td>0.272</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASD X Total BRIEF Scores</td>
<td>0.035</td>
<td>0.166</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SN X Total BRIEF Scores</td>
<td>0.017</td>
<td>0.081</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. *$p < .05$, **$p < .01$  
ASD = Autism Spectrum Disorders; SN = Special Education Needs
### Table 3.5 Summary of hierarchical regression analysis for the effects of scores on the Behavior Rating Inventory of Executive Function Inventories (BRIEF) on verbal victimization.

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>$\beta$</th>
<th>Semi-Partial Correlations</th>
<th>$\text{Adj}R^2$</th>
<th>$\text{Adj}\Delta R^2$</th>
<th>$\Delta F$</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>Age</td>
<td>-.040</td>
<td>-.138</td>
<td>.202</td>
<td>.202</td>
<td>11.98**</td>
</tr>
<tr>
<td></td>
<td>Bullying Others**</td>
<td>.733</td>
<td>.446</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>Age</td>
<td>-.043</td>
<td>-.148</td>
<td>.213</td>
<td>.011</td>
<td>1.41</td>
</tr>
<tr>
<td></td>
<td>Bullying Others**</td>
<td>.682</td>
<td>.407</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ASD Group</td>
<td>-.147</td>
<td>-.092</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SN Group</td>
<td>-.046</td>
<td>-.031</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total BRIEF Scores*</td>
<td>.010</td>
<td>.189</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
<td>Age</td>
<td>-.040</td>
<td>-.137</td>
<td>.217</td>
<td>.004</td>
<td>1.27</td>
</tr>
<tr>
<td></td>
<td>Bullying Others**</td>
<td>.652</td>
<td>.386</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ASD Group</td>
<td>-.177</td>
<td>-.100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SN Group</td>
<td>.025</td>
<td>.016</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total BRIEF Scores*</td>
<td>.010</td>
<td>.185</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ASD X Total BRIEF Scores</td>
<td>.018</td>
<td>.146</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SN X Total BRIEF Scores</td>
<td>.010</td>
<td>.078</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. *$p = .05$, **$p < .01$

ASD = Autism Spectrum Disorders; SN = Special Education Needs
Chapter 4:
General Discussion

This dissertation had three broad research goals. First, to compare a group of high-functioning adolescent boys with an Autism Spectrum Disorder (ASD) to a group of special needs (SN) adolescents without ASD and a group of typically developing (TD) adolescents, to determine if the ASD adolescents differed from the latter two groups in the frequency and types of bullying behavior experienced. Second, to examine the agreement between parent- and self-reports of ASD and other SN adolescent’s experiences with bullying behavior. Third, to determine if two features associated with ASD - deficits in pragmatic language and/or executive function (EF) - contribute to elevated rates of peer victimization. The primary findings of this research can be summarized as follows:

1) Overall, more adolescent boys with ASD reported being victimized in the last couple of months than both their peers with SN and TD peers; however, there were no differences between these three groups of adolescents for bullying others.

2) Adolescent boys with ASD reported more social isolation than both their SN and TD peers.

3) Adolescent boys with ASD reported significantly more physical victimization than their TD peers; however no differences were found in experiences between adolescent boys with ASD and their SN peers for this type of victimization.

4) No significant difference was found between parent- and self-reports of bullying by ASD or SN adolescents.

5) Adolescent boys with ASD scored significantly lower on a pragmatic judgment task than their TD and SN peers.
6) Parental reports indicated that adolescent boys with ASD had significantly more impairment in executive function than their TD and SN peers.

7) An association was found between deficits in executive function and social, physical, and verbal victimization for adolescents with and without ASD.

8) Although it was predicted that pragmatic language might account for the elevated rates of peer victimization experienced by adolescent boys with ASD, as outlined in Chapter 3, this prediction was not supported.

The following sections discuss each of the above findings in the broader context of the existing literature, as well as with respect to implications, limitations, and directions for future research.

4.1 Frequency and Types of Bullying Behavior and the Role of Executive Function

Study 1 revealed that, in comparison to their TD peers, adolescent boys with ASD reported experiencing more social isolation and/or physical victimization at least once or twice within the past couple of months. No differences were found between the three groups of adolescent boys for verbal or electronic victimization. Taken together, these findings indicate that adolescents with ASD are at elevated risk for some forms of peer victimization more so than others.

4.11 Physical Victimization

In an attempt to determine why adolescent boys with ASD experience more physical victimization and social isolation than their TD peers, study 2 of this dissertation found executive functioning (EF) to be a unique predictor for three types of peer victimization: physical, social, and verbal. However, this finding was not unique to ASD, suggesting that EF deficits are a
common underlying dimension shared by some adolescents that place them at greater risk for peer victimization.

Of particular note is that the ASD and SN group both differed significantly from the TD group in the frequency of physical victimization reported; however, they did not differ from each other. Boys in our sample with ASD and SN had significantly more impairments in EF than their TD peers. This finding could indicate that vulnerability to physical victimization depends on the severity of EF deficits in general. On the other hand, it may be that deficits in different types of EF might be more related to physical victimization than others. Due to our small sample size and issues regarding statistical power, the current research was limited to using total BRIEF scores to predict types of victimization. As outlined by Gioia et al. (2000) the BRIEF includes two indices: the Behavioral Regulation Index (BRI) and the Metacognition Index (MI). The BRI is comprised of the Inhibit (e.g., the ability not to act on impulse), Shift (e.g., the ability to shift attention from one situation, activity, to another) and Emotional Control (e.g., the ability to control one’s emotions) scales, while the MI is comprised of higher-order EF including Initiation (e.g., the ability to start a task or activity), Working Memory (e.g., one’s ability to hold information in mind), Plan/Organize (e.g., the ability to plan ahead with setting goals and anticipating future events), Organization of Materials (e.g., the ability to organize one’s world and possessions), and Monitoring (e.g., the ability to monitor one’s effect his/her behaviour might have on others) scales. Summed together, the BRI and the MI comprise a global/total BRIEF score. It is of interest that additional analyses examining the relationships between subdomains of both the BRI and MI and types of peer victimization (see Appendix F) revealed that the strongest correlations between physical victimization and the subdomains of the BRIEF were for Shift, and Plan and Organize. In contrast, the Organization of Materials and Monitoring
subdomains of the BRIEF (higher-order EFs) were not significantly related to physical victimization.

An additional explanation for the elevated rates of physical bullying reported by the adolescents in our sample with ASD and their SN peers may be that these boys are perceived by their perpetrator(s) as being different and/or as physically weak. For example, individuals with ASD and ADHD have been found to have difficulties with motor movement and are seen by others as being awkward and/or clumsy (Pan, Tsai, & Chu, 2009). Poor gross motor skills have also been found to contribute to the risk of being bullied during childhood (Bejerot, Edgar, & Humble, 2011). It is not clear whether difficulties with motor movements contribute to the physical victimization experienced by adolescent boys with ASD and future research is warranted. Studies examining this avenue of research could assess adolescent’s experiences with bullying behavior, in addition to how well they perform various activities in terms of gross motor skills as observed/rated during physical education classes at school.

4.12 Social Victimization

When examining types of victimization using individual items on the bullying/victimization questionnaire in study 1, it was found that more adolescents with ASD reported more social isolation than both their SN and TD peers. This finding is consistent with the work of Humphrey and Symes (2011), who found that students with ASD spent less time interacting in a positive way with their peers and more time alone than TD students or students with dyslexia. Individuals with ASD have a limited peer network, as they often report few, if any, friends (Rowley et al., 2012; Wainscot, Naylor, Sutcliffe, Tantam, & Williams, 2008). The sparse friendships they form are usually unstable and distant (Rowley et al., 2012). One explanation for the lack of friends and a diminished peer network may be deficits in EF. For
example, adolescents with ASD may display impulsive behaviors (e.g., speaking out of turn, interrupting others, not following rules, making inappropriate noises or gestures) that their peers find disruptive and/or annoying. As a result, peers are reluctant to engage in social interaction with adolescents with ASD, which results in increased social victimization for this population (see Rose, Monda-Amaya, & Espelage, 2011). Findings from the second paper of this dissertation support this explanation, revealing EF to be a significant predictor of social victimization.

It is possible that having a friendship with a TD peer may act as a buffer against peer victimization for those with ASD. Humphrey and Symes (2011) have developed the Reciprocal Effects Peer Interaction model (REPIM; see Appendix A) that conceptually illustrates how the defining criteria (e.g., impairment in social interaction and communication [APA, 2000]) can lead to victimization and increased social victimization in individuals with ASD, although it should be noted that this model does not take into account the quality or types of friendships experienced by those with ASD. There is evidence to suggest that dyadic friendships formed between children with ASD and TD children (mixed friendships) are similar in a number of ways to dyadic friendships formed between TD children. For example, Bauminger et al. (2008) found that children with ASD in dyadic mixed friendships displayed a greater amount of goal directed activities, sharing, positive affect, and parallel play, than children with ASD in dyadic friendships with children with ASD or some other type of exceptionality (non-mixed friendships). Little research has focused on the quality and types of friendships formed by those with ASD; future research in this area is needed to determine whether or not children with ASD in mixed friendships might experience less social victimization from peers than children with ASD in non-mixed friendships.
Interestingly, although EF was found to be a significant predictor of social victimization across groups, and both the ASD group and the SN group were reported as having significant deficits in EF, only the ASD group reported elevated rates of social isolation. The SN group had somewhat lesser deficits in EF than the SN group, suggesting that severity may play a role. On the other hand, in accordance with Kochenderfer-Ladd, Ladd, and Kochel’s (2009) theoretical framework of peer victimization, it is possible that other child and/or environmental factors, such as deficits in theory of mind and/or parenting styles, may add to or mediate the relationship between EF and social victimization for adolescents with ASD. Kochenderfer-Ladd et al.’s model stresses the integration of both child factors (social behaviors, emotional reactivity, social cognition, and psychosocial vulnerability) and environmental factors (parenting practices, schools and teachers, and peer culture) as precipitants of peer victimization.

4.13 Verbal Victimization

The current research did not find any differences among the groups of adolescents for verbal forms of bullying behavior (e.g., name calling; teasing). This result is surprising as previous research with TD and ASD samples has found this form of bullying to occur more frequently than physical bullying (Cappadocia, Weiss, & Pepler, 2012; Wainscot et al., 2008; Wang, Iannotti, & Nansel, 2009). It is possible that the elevated rates of verbal bullying reported in previous research are the result of not clearly defining to participants what constitutes bullying behavior prior to data collection. For example, a number of studies have shown that a large proportion of typically-developing adolescents fail to simultaneously take into account the defining criteria (intent to harm, imbalance in power, repetition of behavior) in their perceptions of bullying behavior (Frisen, Holmqvist, & Oscarsson, 2008; Naylor, Cowie, Cossins, Bettencourt, & Lemme, 2006); the result is inflated rates of verbal bullying. For the current
research a clear definition incorporating all three criteria of bullying behavior was given to the adolescents and their parents before data were collected. Alternatively, it is possible that the adolescent boys with ASD in our sample experienced more verbal bullying than they actually reported, due to difficulties in distinguishing between verbal behavior that is considered to be abusive versus verbal behavior that is considered non-abusive. For example, the definition used in the current research outlined that *it is not bullying when the teasing is done in a friendly and playful way*. When called unkind names and teased, the adolescent boys with ASD might not have been able to recognize whether this type of bullying was directed at them with the intent of causing harm or in the form of a friendly gesture. Due to difficulties in interpreting nonliteral uses of language, such as jokes and metaphor (Martin & McDonald, 2004; Mitchell, Saltmarsh, & Russell, 1997), sarcasm, and figures of speech (Happé 1995; Jolliffe & Baron-Cohen, 1999), it is possible that individuals with ASD may not recognize when they are being verbally victimized, especially when these nonliteral uses of language are used by the perpetrator as a means to cause harm. It is also possible that individuals with ASD under-report verbal victimization because they fail to pay attention to their peers. For example, one of the defining criteria of ASD is restricted, repetitive patterns of behavior and/or interests (APA, 2000). Individuals with ASD might have excessive circumscribed interests that consume all of their attention. Due to their fixation on such interests, in addition to their difficulties in cognitively shifting from one mind set to another (as found in study 2), individuals with ASD may not notice when they have been verbally victimized. One way to determine whether individuals with ASD fail to notice verbal victimization would be to use reports from multiple informants (e.g., peers, parents, and teachers) in addition to self-reports.

**4.14 Electronic Victimization**
In recent years, bullying through electronic means (cyberbullying) has been of major interest to researchers. Notably, the current research did not find any differences between the boys with ASD and their TD peers for victimization experienced through the use of a mobile phone or computer. In study 2, the low proportion (12%) of adolescents being involved in electronic victimization is consistent with earlier findings by Cappadocia et al. (2011), who reported that 10% of their ASD sample had experienced some type of cyberbullying. Research on cyberbullying (Mesch, 2009) has shown that those at greater risk for this type of behavior tend to be adolescents who engage in chat rooms and who are actively involved with social networking sites on the internet (e.g., Facebook). A study by Mazurek, Shattuck, Wagner, and Cooper (2012) found that most youths with ASD spend very little of their spare time engaging in social-media (e.g., internet, chatting, email), but rather prefer non-social forms of media use such as playing video games and watching television. Taken together these findings suggest that adolescents with ASD may have a lower risk of experiencing cyberbullying in comparison to their TD peers.

4.15 Bullying Others

In contrast to Van Roekel, Scholte, and Didden (2010) and Rowley et al. (2012), results of paper 1 revealed no differences between the adolescents with ASD and their SN or TD peers for bullying others. This inconsistency in findings may reflect sampling differences, as Van Roekel et al. and Rowley et al. included adolescents with ASD and comorbid ADHD (which the current study did not). Previous research has shown that children and adolescents with ADHD tend to fit the profile of being both victimized and bullying others (Weiner & Mak, 2009). As well, using parental reports, Montes and Halterman (2007) found that children with ASD and ADHD/ADD were 5 times more likely than those in the general population to bully others.
Unnever and Cornell (2003) surveyed middle school students and found an indirect relationship between ADHD symptomatology and bullying others, with self-control mediating the relationship between ADHD symptoms and being a perpetrator. While features common to ADHD appear to contribute to the dual status of being a perpetrator as well as being victimized, the current research found the rate of bullying others in the SN group (comprised of adolescents with LD and/or ADHD) to be comparable to the general population. It should be noted that ADHD diagnoses were not confirmed for the current research and it is possible that some of the students who received a diagnosis of ADHD in early childhood, no longer experience the symptoms as an adolescent. For example, controlling for use of medication, it has been found that approximately 50% of children diagnosed with ADHD do not continue to experience clinical symptoms during adolescence or adulthood (Rabiner et al., 2010).

An alternative explanation as to why no differences were found among the three groups for bullying others may be that the adolescents in our sample were reluctant to self-report bullying others in fear of this information being disclosed to school officials and/or their parents. While confidentiality was assured, self-reporting of bullying behavior by the adolescents was not anonymous to the researcher. This method of collecting self-report data regarding bullying behavior experienced by adolescents is different from previous research where researchers generally utilized self-report questionnaires of bullying behavior in group settings. By collecting data in group settings students are likely to feel their responses will be more anonymous to the researcher, and as a result may be more open to disclosing information as to the frequency and types of bullying behavior experienced. Consistent with this explanation, only 4.3% of the sample in study 1 met full criteria for bullying others (e.g., endorsing any form of bullying others
either once a week or several times a week) (Olweus, 1993) in comparison to past research that has found rates as high as 13% (Nansel et al., 2001).

In summary, the current research found EF to be a significant predictor of social, physical, and verbal victimization for adolescents with and without ASD; however, it should be noted that other factors may mediate this relationship. For instance, a number of studies have linked EF to social skills in both ASD and TD populations (Gilotty et al., 2002; Jacobson, Williford, & Pianta, 2011; McKown, Gumbiner, Russo, & Lipton, 2009; Oerlemans et al., 2013; Reichow, Salamack, Paul, Volkmar, & Klin, 2008). Further, Kenworthy et al. (2009) examined EF in children with ASD and found that both scores on the Behavioral Regulation Index and the Metacognition Index, as measured by the BRIEF, were related to all three features central to the disorder (impairment in interaction and communication, and restrictive and repetitive behaviors). Future research is needed to explore whether or not a lack of social skills and/or other factors associated with ASD may mediate the relationship between EF and peer victimization.

It should be noted that the relationship found between EF and peer victimization may be bi-directional. To examine this issue, reversed hierarchical regressions were performed (see Appendix H), revealing that all three types of peer victimization (physical, social, and verbal) uniquely predicted EF. This finding suggests that peer victimization may exacerbate EF difficulties. For example, there is evidence that brain activity can be altered by social exclusion (Campbell et al., 2006). Campbell et al. found that in comparison to participants who were not socially excluded, those who were socially excluded had lower activation in regions in the brain associated with self-regulation and attentional processes (occipital cortex, parietal cortex, and right prefrontal cortex). When activated these regions mediated the relationship between social
exclusion and self-control. Additionally, it is possible that physical victimization, in itself, can result in trauma to one or more regions in the brain responsible for EF development.

4.2 Parent- and Self-Reports of Bullying Behavior

Results of the current research revealed no significant difference between parent- and self-reports of bullying behavior experienced by adolescents with ASD or SN; however, parent reports of bullying behavior experienced by adolescents without ASD or SN were less in agreement with their child when reporting whether their child had been called mean names/made fun of/teased, or whether their child had bullied another student in this manner. The latter finding is consistent with previous research indicating that approximately 50% of parents of TD students are not aware of the bullying behavior experienced by their child/children (Mishna, Pepler, & Weiner, 2008; Sawyer, Mishna, Pepler, & Weiner, 2011). This agreement between parent-and self-reports of bullying behavior for ASD and SN children suggests that these parents are more attentive to their child’s/children’s peer relationships and social networks than parents of TD children. However, there is a gap in the literature as to how parents of children with ASD and/or SN perceive, conceptualize, and respond to bullying behavior experienced by their child/children. Although these parents may be more aware of their children’s bullying experiences than parents of TD children, it has yet to be determined if they respond to the situation, and if so, how? As pointed out by Waasdropt, Bradshaw, and Duong (2011), there are a number of ways that parents can respond when made aware that their child has been bullied. Some response strategies used by parents can be maladaptive, resulting in a negative outcome (e.g., worsening of victimization) for the child. On the other hand, using adaptive strategies, parents can play a major role in preventing or intervening when their child is being bullied. Although the bullying literature has grown quite large, very little research has focused on
parental responses to peer victimization. Future research in this area is crucial for the development of collaborative bullying prevention and intervention programs involving parents.

Although the current research found high concordance between parent- and self-reports of bullying behavior experienced by adolescents with ASD and SN, this is not to say that parents with children with ASD or SN are necessarily reliable sources for reporting on their child’s bullying experiences. For example, when examining the correlations between child-reports and parental-reports of bullying behavior across groups (see additional analyses in Appendix D), significant correlations were found between the adolescents with ASD and their parents for reporting physical, verbal, and electronic victimization, but not for reporting social victimization. This lack of relationship may reflect parents over-reporting the social victimization experienced by their children, perhaps in an attempt to stress the seriousness of the issue. Or, it is possible that individuals with ASD, but not their parents, fail to notice the less obvious types of social victimization (e.g., spreading of rumors) due to various deficits in social cognition. As discussed earlier, reports from multiple informants (e.g., peers, parents, and teachers) in addition to self-reports would be useful for determining whether individuals with ASD are able to detect some forms of bullying more so than others.

Given the rates of victimization reported by some researchers are somewhat higher than in the current study, it is possible that the adolescents with ASD or SN who participated in the current research did not disclose their bullying experiences to their parents or the researcher. For example, when using interviews, Wainscot et al. (2008) found that 40% of adolescents with ASD reported being victimized daily. When looking across the types of victimization in the current study, however, only 12.5% of the ASD adolescents self-reported that victimization occurred several times a week (see Appendix B). In light of this issue it is advisable in future research to
use peer-nominations to assess bullying behavior. With this method students are asked to nominate other students in the class who are being victimized or who bully others (Boivin & Hymel, 1997). Work by Veenstra, Lindenberg, Zijlstra, de Winter, and Verhulst (2007) has refined this method of assessment, focusing more specifically on the dyadic relationship between the child being victimized and the perpetrator, where students are asked to report their own experiences of bullying behavior as either being victimized or as a perpetrator, as well as nominate other students as either being victimized or a perpetrator in relation to themselves. Due to the recruitment of adolescents from different schools across different demographic regions, it was not feasible to use this approach in the current study. Previous studies have used single or mixed methods for data collection (e.g., parental reports, self-reports, teacher reports, interviews), and all have indicated that children and adolescents with ASD are at greater risk of bullying behavior than their TD peers. In light of this consistent finding, a further goal of the current research was to determine if deficits in pragmatic language and/or executive functioning might contribute to the elevated rates of bullying behavior experienced by this population.

4.3 Pragmatic Language and ASD

As outlined in chapter 3, study 2 found pragmatic language to be significantly lower in the adolescent boys with ASD than their TD peers. This finding is consistent with previous research (Capps, Kehres, & Sigman, 1998; Kelley, Paul, Fein, & Naigles, 2006). However, in contrast to our hypotheses, pragmatic language was not significantly related to victimization. Care should be taken in interpreting this lack of finding as the current research was limited in a number of ways. For example, although the adolescent boys with ASD scored lower than their TD peers, their standardized scores were nonetheless within the average range. As well, due to limited time for testing sessions, only the Pragmatic Judgment test of the Comprehensive
Assessment of Spoken Language (CASL; Carrow-Woolfolk, 1999) was administered. It is possible that implementing the CASL’s set of Supralinguistic tests (i.e., those that assess inference, non-literal language, and ambiguous sentences), as well as the Pragmatic Judgment test, might have produced different findings. Supralinguistic tests measure how well one comprehends complex language when the meaning cannot be derived from lexical or grammatical information (e.g., sarcasm); the Pragmatic Judgment test, on the other hand, measures one’s awareness of the appropriate use of language in certain social situations, as well as the ability to adjust one’s use of language as needed. It is likely that the adolescents with ASD did well on the Pragmatic Judgment test because they were able to use scripted knowledge taught to them at an early age. For example, one vignette on this test asks the participant to name two things they could do when they are lost and unable to locate their aunt’s house. As a safety precaution, it is likely that the parents/caregivers of the adolescents with ASD participating in the current research have rehearsed with them a protocol as to what to do when faced with this type of situation. Although the adolescents may know what to do in this situation, it is unclear whether they could behaviorally follow through with the protocol. Supporting this explanation, high-functioning individuals with ASD have been found to perform well on standardized, structured tests of pragmatic language; however, in daily living where social interactions are not structured, these individuals often have difficulties (Volden, Coolican, Garon, White, & Bryson, 2009; Young Diehl, Morris, Hyman, & Bennetto, 2005).

It has long been suggested that the development of pragmatic language is dependent on Theory of Mind (ToM; Baron-Cohen, 1995; Sperber & Wilson, 2002). Research with boys with Fragile X syndrome has revealed not only an association between these two cognitive abilities, but also a correlation between each of these abilities and the “genetic variation at the FMR1
“locus” (Losh, Martin, Klusek, Hogan-Brown, & Sideris, 2012, p. 1). ToM has been defined as the ability to assign mental states to self and to others in order to explain and predict behavior (Baron-Cohen, 1995). It is thought that individuals with ASD have deficits in ToM and, as a result, may not correctly perceive bullying behavior when it occurs (Van Roekel et al., 2010). However, Van Roekel et al. (2010) found that those with high-functioning ASD were able to correctly perceive bullying behavior in social situations when shown a series of video clips taken from movies and a television show; however, the complexity of the media used in this study is unknown and while those with ASD may be able to identify obvious forms of bullying (e.g., physical) they may struggle when encountering a real-life situation. Research in the area of bullying behaviour and ToM with ASD populations is limited and it has yet to be determined as to whether or not individuals with ASD can correctly perceive bullying behavior in naturalistic settings. As mentioned in Chapter 2, ToM in young TD children has been found to be a significant predictor for both victimization and bullying others as an adolescent (Shakoor et al., 2012). Although impairments in ToM have been noted in individuals with ASD, future research is needed to determine whether deficits in this cognitive ability may contribute to the elevated risk of victimization experienced by this population.

4.4 Intervention and Prevention

The relationship found between EF and peer victimization is important for the development of effective bullying prevention and intervention programs for adolescents, both with and without ASD or SN. However, this is only one relationship found among many that needs to be considered. The current research tested a single facet (social cognition) of the REPIM model, designed specially for children and adolescents with ASD. Kochenderfer-Ladd, Ladd, and Kochel (2009) have developed a much broader model that not only provides a
framework for future research, but also outlines a number of child and environmental factors that need to be addressed in order to develop efficient bullying prevention and intervention programs. Although this model was not designed specifically for children and adolescents with ASD, conceptually it adds to our understanding as to why this population is at heightened risk for peer victimization. As shown in Chapter 1 (Figure 1), Kochenderfer-Ladd et al. include a number of child factors that can contribute to peer victimization, beginning with social behaviors. This part of the model is based on the premise that children may display behaviors that elicit negative peer relationships, and this in turn leads to peer victimization. For example, children with ASD may withdraw from social situations due to their difficulties in interacting and communicating with their peers; resulting in poor peer relationships and greater vulnerability to victimization. On the other hand, children with ASD may display behaviors that their peers find annoying and/or odd and that can lead to negative peer relationships and victimization. In either case, prevention programs for ASD children need to include teaching social skills and providing opportunities for these skills to be practiced. Social skills are needed for interacting successfully with others and are important for building and maintaining quality relationships that may in turn act as a buffer against peer victimization (Malecki & Demaray, 2004).

Kochenderfer-Ladd et al.’s (2009) model also identifies emotional reactivity and regulation as another child-level factor. Emotional reactivity refers to how rapidly and strongly one feels emotions, and emotional regulation refers to how well one can control one’s emotions (Kochenderfer-Ladd et al.). The current research supports this link with its finding of a significant relationship between emotional control (as measured by the BRIEF) and physical, social, and verbal victimization (see Appendix F). Gioia et al. (2000) describe emotional control, measured by the BRIEF, as one’s ability to regulate responses to one’s emotions. Difficulties
with emotional control can be behaviorally expressed by excessive emotional reactions to minor events. Examples of BRIEF items assessing emotional control include “overreacts to small problems” and “has explosive, angry outbursts” (Gioia et al., 2000, p. 38). Although sparse, there is evidence to suggest that children with ASD have difficulty regulating their emotions (Ashburner, Ziviani, & Rodger, 2010). It has been suggested that TD children who are chronically victimized experience more physiological arousal at the time of victimization; this over-arousal inhibits their ability to apply effective strategies in order to resolve the situation (Rosen, Milich, & Harris, 2009). It is possible that this hyper-arousal might be linked to the sensory sensitivity experienced by many children with ASD (Reynolds & Lane, 2008). If this is the case, one would speculate that regulating emotions would be more difficult for individuals with ASD due to the stronger intensity of emotional arousal. This may be a double jeopardy where individuals with ASD have cognitive difficulties in EF associated with the pre-frontal cortex, in addition to the added intensity of emotional arousal associated with the autonomic nervous system. Due to their hyper-arousal and lack of abilities to regulate their emotions, individuals with ASD are likely to respond to victimization with an emotional response that the perpetrator finds rewarding, and, as a result, the bullying is repeated. In support of this idea, it has been found that feelings of anger, but not fear, have been linked to the peer victimization experienced by adolescents with ASD (Rieffe et al., 2012). Although more research is needed in this area, these findings suggest that teaching the child with ASD strategies for self-control and regulating one’s emotions (e.g., EF training) would be beneficial. As well, future research is needed to examine how hyper-arousal and deficits in EF together may contribute to the peer victimization experienced by this population.
A number of studies provide evidence that the implementation of various programs and strategies (e.g., computerized training, physical activity, and school curricula) can lead to improvement in EF in children (for a review see Diamond, 2012). However, self-control and the regulation of emotions are only two of a number of cognitive abilities that fall under the umbrella of EF, and it has been proposed that in order for EF training to be efficient it should take a more global perspective, encompassing what many consider to be the three core features of EF: inhibitory control, working memory, and cognitive flexibility (Diamond, 2012; Miyake et al., 2000). Diamond (2012) discusses three important elements with regards to EF training. First, training programs and activities need to target multiple EF abilities. Second, it is important to involve children in programs and activities that they find motivating, as improvement in EF is dependent on repeated practice. Third, it is important to use programs and activities that also embrace emotional and social development (e.g., character development). Such programs and activities not only increase feelings of social belonging and support, but also facilitate improvement in EF.

In looking at the developmental trajectory of EF, it is anticipated that the adolescents in my sample would benefit from EF training, especially those with ASD who were found in the current research to have significant impairments in these cognitive abilities. Although studies on the development of EF have focused mainly on pre-school aged children, there is evidence from longitudinal research that suggests that EF continues to development during adolescence, albeit at a slower rate (for a review see Best & Miller, 2010). EF training could be implemented in a school setting by including extra-curricular activities that the adolescent finds of interest, such as playing a game of chess, or participating in a team sport. Alternatively, parents could enroll their child in similar activities that take place in the community. Given inhibitory control, working
memory, and cognitive flexibility are viewed by many as being the core features of EF (Miyake et al., 2000), it is important to find activities that elicit these abilities. Improvement in these core features is likely to lead to improvement in what are considered higher-order EFs such as planning and organizing or monitoring one’s behavior. Notably, in the current research, as measured by the BRIEF, deficits in all three of the core features of EF (inhibition, cognitive flexibility, and working memory) were related to physical and social victimization.

Deficits in social cognition are also believed to play a major role in peer victimization. Kochenderfer-Ladd et al. (2009) refer to social cognition as one’s attributes and self-perceptions, as well as social information-processing. Although the current research did not find a relationship between pragmatic language and victimization, this is not to say that social cognition is not an important child factor to address. In fact, it might be one of the most important factors, given the deficits in theory of mind found in individuals with ASD (Tager-Flusberg, 2003). To date, very little research has examined how attribution style and self-perceptions may relate to peer victimization with an ASD population and this area warrants future research.

According to Kochenderfer-Ladd et al. (2009), a further child factor that needs to be addressed is psychosocial vulnerability such as anxiety and depression. A number of studies have shown anxiety and depression to be highly comorbid with ASD (Mayes et al., 2011). Recently, Storch et al. (2012) found a link between victimization and anxiety and depression symptoms in 60 young adolescents with ASD. As well, Cappadocia et al. (2012) reported a connection between insecure/anxious problem behaviors and peer victimization with a sample of children and adolescents with ASD. Therefore, it is important to screen and treat mental health problems that might co-exist with victimization. Although Kochenderfer-Ladd et al. focus on psychosocial
vulnerability (e.g., depression, anxiety) as a precursor to peer victimization, the relationship is likely bi-directional.

In addition to child factors, Kochenderfer-Ladd et al. (2009) include a number of environmental factors in their model including parenting practices, peer culture, and teachers and schools. As discussed earlier, parents can play a major role in preventing or intervening when their child is being bullied by using adaptive strategies. Pepler (2006, p. 18) suggests parents and/or other adults need to use direct instruction in the form of scaffolding (e.g., adjusting assistance provided to children as their learning progresses). For children who are victimized, this could include “moment-to moment” support for developing assertiveness and social skills, as well as strategies to regulate behavior and emotions. For example, parents could schedule time each morning before their child leaves for school to talk about and review strategies with their child that could be used to help stop the bullying. Such strategies might include the child telling a teacher when victimized, and/or joining friends during free time outside of class, and avoiding the student who is bullying them. Pepler also stresses that parents and/or other adults need to be actively involved in minimizing negative social experiences and providing positive social experiences for their child as a means of developing healthy peer relationships. Consequently, it is important to include parents as part of a bullying prevention or intervention program.

However, parents of children with ASD experience high levels of parenting stress and are at-risk of increased mental and physical health problems (for a review, see Karst & Van Hecke, 2012). As a result, parents of children with ASD may not be able to adequately assist their child to resolve bullying problems. Notably, Cappadocia et al. (2011) found a relationship between parental mental health problems and peer victimization in children and adolescents with ASD. In their sample, 10% of the parents met criteria for a severe mental illness. For such cases, it is
critical to support/treat the parents, as well as the child. One way to address this problem is to have school social workers follow-up with the family when it has been reported that their child has been victimized at school. The school social worker can assess the family situation and provide information for available resources for both the family and the child.

Further environmental factors considered to have an influence on peer victimization include teachers, peers, and schools (Kochenderfer-Ladd et al., 2009). Children and adolescents spend a large proportion of their waking hours at school under the supervision of their teachers. Teachers play a front-line role in the prevention and intervention of peer victimization; however, in many instances they may be unaware of bullying incidents (Houndoumadi & Pateraki, 2001), perhaps due to the covert nature of bullying behavior itself, or because students are more likely to perform such behaviors when teachers are not at hand. Research has revealed that there is considerable variability in teachers’ attitudes and perceptions of bullying behavior that can affect whether or not they intervene (Craig, Henderson, & Murphy, 2000). For example, it has been shown that students in teacher education programs (e.g., pre-service teachers) believe that physical and verbal forms of aggression are more serious than the relational forms of victimization, and as a result they tend to take a passive role when it comes to addressing relational forms of bullying, including social exclusion (Craig et al., 2000; Craig, Bell, & Leschied, 2011). Smith (2011) highlights the importance of teacher training to help reduce bullying and violence in schools. Such training courses for teachers should draw attention to at-risk populations, such as children and adolescents with ASD, and provide teachers not only with the resources they need, but also information with regards to the detrimental effects that social exclusion and other relational types of victimization can have.
The implementation of a universal school-wide anti-bullying program may also be beneficial for deterring the elevated rates of peer victimization seen for children and adolescents with ASD. Numerous universal school-based programs have been developed (see Orpinas & Horne, 2006) and, although they vary in their methods and approaches, there is evidence to suggest that they are effective in reducing school bullying. For example, Ttofi and Farrington (2011) examined 44 anti-bullying programs and found that on average there was a 20-23% reduction for bullying and 17-20% for victimization. The most effective programs were those that had the following features: 1) were intensive and long-lasting, 2) included contact with parents, 3) enforced serious consequences for bullying behavior, and 4) provided enhanced supervision on the playground. Barbero, Hernandez, Esteban, and Garcia (2012) also examined the effectiveness of anti-bullying school-based programs and found that the most effective programs were those that focused on building social relationships and social skills. In support of this conclusion, Durlak, Weissberg, Dymnicki, Taylor, and Schelling (2011) found a reduced level of conduct problems and bullying behavior in student populations from schools that implemented some type of social and emotional learning program. Whether implemented at the individual-, classroom-, or school-level, emotional learning and/or anti-bullying prevention and intervention programs that focus on enhancing students social-emotional competency may help reduce the elevated risk of bullying behavior seen in ASD and other SN populations. Enhancing students’ social-emotional competency could lead to the development of stable friendships and peer networks that in turn could act as a buffer against social victimization, as well as other types of peer victimization.
4.5 Theoretical Implications and Improvements to Current Research

The current research tested three of the four child factors of Kochenderfer-Ladd et al.'s (2009) child x environment model: 1) emotion regulation and reactivity, 2) social cognition, and 3) psychosocial vulnerability, and their relationship with peer victimization. The relationship found between peer victimization and EF in the current research supports Kochenderfer-Ladd et al.'s child factor of emotion regulation and reactivity; however, given that total BRIEF scores were used, it is possible that other EF abilities (e.g., inhibition and cognitive flexibility) might also play a role in peer victimization. For example, many researchers support the unity-but-diversity model of EF where components are considered separate, yet related (Miyake et al., 2000). For this model, it is believed that one or more mechanisms underlie each of the central EFs. As displayed in Appendix F, additional analyses revealed that all components of EF, as measured by the BRIEF, were significantly related to social victimization; however, for other types of victimization some EF components were related more so than others. For example, only the behavioral subdomains of Shift (addressing cognitive flexibility) and Emotional Control were significantly related to verbal victimization, suggesting that the EF metacognitive abilities (e.g. monitor, plan and organize) do not contribute to this type of victimization. Further research is needed in order to determine whether Kochenderfer-Ladd et al.'s factor of emotion regulation and reactivity should be extended to include other EF abilities.

The findings of the current research did not support Kochenderfer-Ladd et al.'s (2009) social cognition factor as a predictor of peer victimization. However, the focus of the current research was solely on pragmatic language, and as pointed out by Kochenderfer-Ladd et al., social cognition can take many forms, including self-perceptions, and attributions. As for self-perceptions, adolescents with ASD may have the knowledge of how they should act in various
social situations but struggle with social interactions when they occur in real-life situations. One way to improve the current research would be to observe the use of pragmatic language in adolescents with ASD when interacting with others in a naturalistic setting. A further improvement to the current research would be to assess the attributions of adolescents with ASD with regards to why they think they are victimized by their peers. For example, Graham and Juvone (1998) investigated the relationship between peer victimization and two attributional patterns: characterological self-blame and behavioral self-blame. Characterological self-blame (CSB) is made up of causes based on stable and internal characteristics that are seen as uncontrollable (e.g., because of “how I am”). On the other hand, behavioral self-blame (BSB) is made up of causes based on unstable and internal characteristics that are seen as controllable (e.g., because of something “I did”). Graham and Juvone (1998) found that children who were victimized reported more CSB than those who were not; however, no difference was found in the amount of BSB reported by these two groups. As well, both CSB and BSB were related to the amount of loneliness and anxiety experienced by the children who were victimized. Thus, self-blame attributions made by adolescents with ASD might perpetuate the social victimization experienced by this population. For example, adolescents with ASD might attribute their victimization to having a disorder (because I have ASD), which is viewed by the adolescent as being stable and uncontrollable (CBS), rather than something they did (BSB). If this is the case, then adolescents with ASD will likely anticipate being victimized again due to what they consider as being an unchangeable circumstance. As a result, they are likely to isolate themselves in an attempt to avoid repeated victimization.

As discussed earlier, anxiety and depression are often comorbid with ASD and may play an additional role in the peer victimization experienced by this population. However, in extending this model for use with ASD individuals, it is argued that in addition to comorbid conditions, such as anxiety and depression, ASD in itself can be considered a psychosocial vulnerability given its defining criteria of impairments in social interaction and communication (APA, 2000). In recognizing ASD as a psychosocial vulnerability the current research found that, overall, adolescent boys with ASD reported more peer victimization that their TD peers. This finding indirectly suggests that symptoms of ASD contribute to the experience of peer victimization by this population. However, it is not clear whether some symptoms of the disorder contribute more to peer victimization than others. The current research focused on deficits in EF, an associated feature of ASD that is also seen in other SN populations. As illustrated in study 2, EF was a significant predictor for physical, social, and verbal victimization for both adolescents with and without ASD. Unfortunately, the core features of ASD (impairments in social interaction and communication, and repetitive and ritualistic behaviors [APA, 2013]), were not examined as predictors of peer victimization in the current research as the Autism Diagnostic Observation Schedule (ADOS) was only administered to the adolescents in the ASD group to confirm diagnoses. One improvement to the current research would be to administer a self-report measure that assesses autistic traits in the general population to adolescents in all three groups. Although a number of measures have been developed to assess autistic traits in the general population, one that has been shown to have good validity and factor structure is the Subthreshold AutismTrait Questionnaire (SATQ; Kanne, Wang, and Christ, 2012). The SATQ is a 24-item self-report measure with a 5-factor structure: 1) social interaction, 2) oddness, 3) reading facial expressions, 4) expressive language, and 5) rigidity. By utilizing the SATQ, the defining criteria of ASD
could have been explored as possible predictors, or vulnerability factors, of peer victimization. This would also provide useful data that could be used to explore whether deficits in EF lead to difficulties in social interaction, that in turn, lead to peer victimization.

The current research found EF to be a significant predictor of peer victimization; however, the small amount of overall variance explained by the hierarchical regression analyses conducted in the second study (16% to 22%) suggest that other child and/or environmental factors must play a role. It is possible that Kochenderfer-Ladd et al.’s model is best represented as a continuity model, where child factors are the primary determinants of peer victimization (e.g., difficulties in social interaction), while environmental factors continue to maintain it (e.g., lack of acceptance by peers and/or poor parenting practices). On the other hand, applying Kochenderfer-Ladd et al.’s framework to ASD adolescents might be better viewed as a cumulative risk model where peer victimization is not the result of one distinct child or environmental factor, but a number of child and environmental factors taken together, that either in combination or independently predict peer victimization for this population. Future research is needed to examine the relationships between child factors and environmental factors in order to determine whether or not the peer victimization experienced by adolescents with ASD can be best explained using a continuity model, cumulative risk model, or both.

4.6 General Limitations

Although the two studies in this dissertation extend the literature and further our understanding of the bullying behaviors experienced by adolescent boys both with and without ASD, several limitations should be noted. A general limitation of the current research is that only adolescent boys were included. The decision to only include boys was due to the small prevalence rate of ASD found in girls (APA, 2000). As well, including girls in our sample would
have required a control for gender, and given the small sample size this would have statistically limited the power of the findings. Whether the findings of the current research can be generalized to adolescent girls with and without ASD has yet to be determined and future research is warranted.

An additional limitation of the current research is that the SN control group was heterogeneous and made up of both adolescents with ADHD and/or a LD\textsuperscript{13}; therefore, it is not clear whether these two SN populations might differ in themselves in their experiences and profiles of bullying behavior. It should also be noted that diagnoses for the adolescents with ADHD and/or a LD were not confirmed. If a number of adolescents did not meet criteria for ADHD or LD in the ADHD/LD group this would have resulted in an under-representation of symptomatology for these two disorders. This could also offer an explanation as to why very few adolescents in the current sample reported bullying others. For example, children with ADHD or LD have been found to have a dual profile with being both victimized and bullying others (Twyman et al., 2010; Wiener & Mak, 2009). As a result, caution should be taken in generalizing the findings of the current research to ADHD and/or LD populations.

Lastly, I was unable to determine whether any of the adolescents with ASD who participated in the current research had previously received social skills training or individual counseling with regards to forming peer relationships. As a result, this could have had an effect on the findings. For example, adolescents with ASD who have received such training or counseling might be able to form good relationships and peer networks that in turn may act as a buffer against victimization. For the current research, this would have resulted in fewer

\textsuperscript{13} Originally we were going to compare bullying behavior across three discrete groups of adolescents with SN (e.g., ASD, LD, & ADHD). However, due to difficulties with recruitment and issues regarding comorbidity, the LD and ADHD groups were collapsed together.
adolescents with ASD reporting peer victimization in comparison to findings from previous research.

4.7 Recruitment and Attrition

We encountered several recruitment issues that could have influenced our results. In order to recruit participants, multiple methods were used. In the community, our study was advertised by non-treatment community organizations including the Autism Society Ontario (Peterborough Chapter), Learning Disabilities Association (Peterborough), Emotion and Health Research Laboratory (Trent University), and Autism Spectrum Disorders Laboratory (Queen’s University). Due to an initial lack of response, we additionally offered to compensate parents for their expenses for travelling to and from the laboratories at Trent University and Queen’s University. As well, the adolescent boys were given a gift card worth $10 for each hour of participation, in addition to having their name placed in a draw to win a larger prize.

The process for recruitment of participants at each of the schools began with writing a joint invitation letter by the principal and the researcher. Each school provided the researcher with a mailing list of families with special needs children. The principal or other school officials could not disclose information regarding the specific types of special needs of their students, so as a result the invitation was mailed by the researcher to all families in each school with a special needs child. As suggested by principals of both schools, the invitation was mailed to the home address to ensure parental receipt. Invitation letters were sent to 165 families at the first school and 132 families at the second school. Parents were provided with a stamped return envelope and asked to mail their response to the invitation to the school principal if they and their child (children) were willing to participate. Of the families, 14 from the first school and 16 from the second school were willing to participate in the study. However, during testing it was found that
a number of the adolescent boys from both schools had a below average IQ and had to be
dropped from the study. Additionally, seven boys across the two schools withdrew from the
study for various reasons. This resulted in useable data for 8 adolescent boys at the first school
and 6 at the second school.

A major limitation of the current study was that our sample of adolescents was not
obtained from the same school; therefore we could not control for school environment. While
some participants were recruited and assessed in school settings in the Peterborough region,
others were recruited through non-treatment community organizations and attended testing
sessions at either Queen’s University or Trent University. As requested by their parents, a small
portion of students \((n = 2)\) was tested in their home environment. The current study received
approval at two local school boards in the Peterborough region. For both school boards, it was
stipulated that the adolescents could only participate during their free time (e.g., spare period,
lunch hour, or after school). This constraint took a great deal of planning and scheduling of
appointments at each of the two schools. Although participants were given a reminder of the
testing sessions by their home room teacher each morning, many adolescents were late for their
appointments, or forgot to attend. This was especially noticeable for the adolescents with ADHD.
Further, depending on their schedule, some students were tested in the morning, whereas others
were tested at the end of the day, which could have had an effect on their test results.

4.8 Implications of Experiences with Bullying for Individuals with ASD.

Examining bullying behavior in youth with ASD is important for a number of reasons.
Many believe that impairments in social interaction and difficulties in communication contribute
to the elevated risk of bullying experienced by youth with ASD (see Humphrey & Symes, 2011);
however, it should be noted that the added experience of peer victimization can create a “double
jeopardy” for this population, further impairing their abilities to engage in the social world. For example, individuals with ASD need to learn from peers and friends on how to form healthy relationships; however, peer victimization inhibits such learning experiences. The lack of social engagement and extreme social isolation experienced by this population (Humphrey & Symes, 2011) may also contribute to the high levels of comorbidity and dysfunction seen in ASD. For example, it has been suggested that as many as 95% of children and adolescents with ASD will experience one or more comorbid psychiatric disorders (Joshi et al., 2010).

Although sparse, there is evidence to suggest that the adverse consequences seen in TD youth are common to ASD. For example, peer victimization and a negative friendship style have recently been associated with depression in children with ASD (Pouw, Rieffe, Stockmann, & Gadow, 2013). In addition, children and young adolescents with ASD who are bullied are over 10 times more likely to display higher internalizing behaviors associated with mental health problems than those who are not (Cappadocia et al., 2012). Research with TD children has indicated a bi-directional association between internalizing behaviours (e.g., anxiety and depression) and victimization (Fekkes, Pijpers, Fredriks, & Vogels, 2006); however, whether this type of relationship exists for children and adolescents with ASD is not clear. Regardless of the direction, for children and adolescents with ASD, the added stress of victimization and/or internalizing disorders presents a very complex and worrisome picture.

Good peer relationships are considered necessary for the development of healthy relationships over the lifespan (Pepler, 2006). In comparison to their TD peers, youth with ASD spend more time alone and less time interacting in social situations (Humphrey & Symes, 2010). In addition, they report having few, if any, friends and are often excluded from their peer groups (Wainscot, Naylor, Sutcliffe, Tantam, & Williams, 2008). Being socially excluded can lead to
additional problems for youth with ASD that include feelings of resentment and anger (Rieffe, Camodeca, Pouw, Lange, & Stockmann, 2012), as well as increased hostile cognition and possible aggression toward others (Crescioni & Baumeister, 2009). It is to be expected that these additional problems intensify the difficulties with social interaction experienced by youth with ASD, and in turn further inhibit the development of quality peer relationships.

4.9 Contribution to the Literature and Future Research

The current research extends the literature in various ways. As outlined in study 1, we focused on a number of methodological concerns regarding past research when examining the frequency and types of bullying behavior reported by adolescent boys with ASD. For example, a clear definition of bullying behavior was presented to the participants prior to data collection; ASD adolescents with comorbid ADHD were excluded so findings would be relevant only to the ASD population; and a group of adolescents with special needs served as an additional control group. By addressing these methodological concerns the current research more clearly delineates an understanding of the bullying behavior experienced by adolescent boys with ASD.

A further contribution to the literature is the association found between executive function (EF) and peer victimization. Previous research has linked EF with bullying others (Coolidge, DenBoer, & Segal, 2004); however, little research, if any, has explored how this set of cognitive abilities might contribute to the elevated risk of peer victimization experienced by adolescents with ASD and other at-risk groups. This is an important finding for educators and other professionals who implement bullying prevention and intervention programs at the child-level.

Future research exploring bullying behavior in ASD is of upmost importance to determine how social and cognitive factors central to the disorder may on their own, or in
combination, contribute to the elevated rates of bullying behavior experienced by this population. For example, little is known about the quality and types of friendships formed by individuals with ASD and whether having mixed friendships (i.e., with a typically-developing peer) might shield this population from victimization. Also, more work using naturalistic settings and/or a more stringent measure is needed to determine the role pragmatic language may play in bullying behavior. When looking at cognitive factors, future research is needed to determine if deficits in theory of mind may contribute to the elevated rate of victimization experienced by children and adolescents with ASD. Although it has been found that high-functioning individuals with ASD can correctly perceive bullying behavior when presented with an in-lab task (Van Roekel et al., 2010), it has yet to be determined whether they are accurate in perceiving bullying behavior in naturalistic settings.

Additional areas for future research include the examination of parental responses to the bullying behavior experienced by their children and adolescents with ASD. Do parents of children with ASD respond differently than parents of TD children? This question is important for the development of collaborative bullying prevention and intervention programs that include both parents and school officials. Also, it is not clear whether difficulties with motor movements, sensory sensitivity, and/or the display of repetitive and ritualistic behaviors may contribute to the victimization experienced by children and adolescents with ASD, opening yet other avenues for research. Further, it is important to replicate the findings of the current research with a sample of girls with ASD. Because of their difficulties in social interactions and communication, it is likely that girls with ASD do not fit the same bullying profile as TD girls. Given the negative repercussions of bullying behavior and the rise in the prevalence of ASD, it is imperative that we
further our understanding in this area in order to develop effective bullying prevention and intervention programs that target this at-risk population.
4.10 References


and regulation to preschoolers’ social skills and sociometric status. *Child Development, 64*, 1418-1438.


Smith, P. K. (2011). Why interventions to reduce bullying and violence in schools may (or may not) succeed: Comments on this special section. *International Journal of Behavioral Development, 35*, 419-423.


Tager-Flusberg, H. (2003). Exploring the relationship between theory of mind and social-


Appendix A: Reciprocal Effects Peer Interaction Model (Humphrey & Symes, 2011)

**STUDENT WITH ASD**
- Social cognition difficulties
  - Poor social and communicative skills
    - Reduced quality and frequency of peer interaction
      - Reduced motivation for social contact, more solitary behavior
        - Increased bullying and social rejection
          - Increased isolation and loneliness

**PEER GROUP**
- Lack of awareness and understanding of ASD
  - Reduced acceptance of difference
    - Limited social networks, fewer friends, less social support
      - Reduced opportunities to learn about ASD

Limited social networks, fewer friends, less social support
Appendix B: Percentages of types and frequencies of victimization reported by adolescents across groups (Study 1).

<table>
<thead>
<tr>
<th></th>
<th>I have not been bullied in this way</th>
<th>Only once or twice</th>
<th>3 times a month</th>
<th>About once a week</th>
<th>Several times a week</th>
</tr>
</thead>
<tbody>
<tr>
<td>I was called mean names, and made fun of, or teased in a hurtful way.</td>
<td>58.3(^1)</td>
<td>16.7(^1)</td>
<td>0.0(^1)</td>
<td>12.5(^1)</td>
<td>12.5(^1)</td>
</tr>
<tr>
<td></td>
<td>59.1(^2)</td>
<td>22.7(^2)</td>
<td>9.1(^2)</td>
<td>4.5(^2)</td>
<td>4.5(^2)</td>
</tr>
<tr>
<td></td>
<td>58.3(^3)</td>
<td>33.3(^3)</td>
<td>4.2(^3)</td>
<td>4.2(^3)</td>
<td>0.0(^3)</td>
</tr>
<tr>
<td>Other students kept me out of things on purpose, excluded me from their group of friends, or completely ignored me. (^a)^(^b)</td>
<td>54.2(^1)</td>
<td>20.8(^1)</td>
<td>12.5(^1)</td>
<td>4.2(^1)</td>
<td>8.3(^1)</td>
</tr>
<tr>
<td></td>
<td>72.9(^2)</td>
<td>22.7(^2)</td>
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<td></td>
<td>79.2(^3)</td>
<td>16.7(^3)</td>
<td>4.2(^3)</td>
<td>0.0(^3)</td>
<td>0.0(^3)</td>
</tr>
<tr>
<td>I was hit, kicked, pushed, shoved around, or locked indoors. (^a)</td>
<td>70.8(^1)</td>
<td>12.5(^1)</td>
<td>4.2(^1)</td>
<td>12.5(^1)</td>
<td>0.0(^1)</td>
</tr>
<tr>
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<td>90.9(^2)</td>
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<td>4.5(^2)</td>
<td>0.0(^2)</td>
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<td>83.3(^3)</td>
<td>16.7(^3)</td>
<td>0.0(^3)</td>
<td>0.0(^3)</td>
<td>0.0(^3)</td>
</tr>
<tr>
<td>Other students told lies or spread false rumours about me and tried to make others dislike me.</td>
<td>66.7(^1)</td>
<td>16.7(^1)</td>
<td>12.5(^1)</td>
<td>4.2(^1)</td>
<td>0.0(^1)</td>
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<td>81.8(^2)</td>
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<td>4.5(^2)</td>
<td>9.1(^2)</td>
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<td>79.2(^3)</td>
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<td>8.3(^3)</td>
<td>0.0(^3)</td>
</tr>
<tr>
<td>I was bullied with mean names and comments about my race or colour.</td>
<td>87.5(^1)</td>
<td>4.2(^1)</td>
<td>4.2(^1)</td>
<td>4.2(^1)</td>
<td>0.0(^1)</td>
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<td>90.9(^2)</td>
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<td>4.5(^2)</td>
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<td>91.7(^3)</td>
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<td>4.2(^3)</td>
<td>4.2(^3)</td>
<td>0.0(^3)</td>
</tr>
<tr>
<td>I was bullied with mean names and comments about my religion.</td>
<td>83.3(^1)</td>
<td>8.3(^1)</td>
<td>4.2(^1)</td>
<td>0.0(^1)</td>
<td>0.0(^1)</td>
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<td>0.0(^3)</td>
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<td>0.0(^3)</td>
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<tr>
<td>Other students made sexual jokes, comments, or gestures to me.</td>
<td>70.8(^1)</td>
<td>20.8(^1)</td>
<td>4.2(^1)</td>
<td>4.2(^1)</td>
<td>0.0(^1)</td>
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<td>77.3(^2)</td>
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<td>0.0(^3)</td>
<td>4.2(^3)</td>
<td>0.0(^3)</td>
<td>0.0(^3)</td>
</tr>
<tr>
<td>I was bullied using a computer or e-mail messages or pictures.</td>
<td>87.5(^1)</td>
<td>8.3(^1)</td>
<td>4.2(^1)</td>
<td>0.0(^1)</td>
<td>0.0(^1)</td>
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<td>95.5(^2)</td>
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<td>0.0(^2)</td>
<td>0.0(^2)</td>
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<td>95.8(^3)</td>
<td>4.2(^3)</td>
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<td>0.0(^3)</td>
<td>0.0(^3)</td>
</tr>
<tr>
<td>I was bullied using a mobile phone.</td>
<td>100.0(^1)</td>
<td>0.0(^1)</td>
<td>0.0(^1)</td>
<td>0.0(^1)</td>
<td>0.0(^1)</td>
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<td>0.0(^3)</td>
<td>0.0(^3)</td>
<td>0.0(^3)</td>
</tr>
</tbody>
</table>

Notes:
1 = Autism Spectrum Disorders group (ASD) n=24
2 = Learning Disorder group (LD) n=22
3 = Control group n=24
\(^a\) indicates significant difference between ASD & Control group
\(^b\) indicates significant difference between ASD & LD/ADHD group
Appendix C: Percentages of types and frequencies of bullying others reported by adolescents across groups (Study 1).

<table>
<thead>
<tr>
<th>Event Description</th>
<th>I have not bullied another student in this way in the past couple of months</th>
<th>Only once or twice</th>
<th>3 times a month</th>
<th>About once a week</th>
<th>Several times a week</th>
</tr>
</thead>
<tbody>
<tr>
<td>I called another student(s) mean names, and made fun of, or teased him or her in a hurtful way.</td>
<td>83.3&lt;sup&gt;1&lt;/sup&gt;</td>
<td>8.3&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;1&lt;/sup&gt;</td>
<td>8.3&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>68.2&lt;sup&gt;2&lt;/sup&gt;</td>
<td>27.3&lt;sup&gt;2&lt;/sup&gt;</td>
<td>4.5&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>62.5&lt;sup&gt;3&lt;/sup&gt;</td>
<td>29.2&lt;sup&gt;3&lt;/sup&gt;</td>
<td>8.3&lt;sup&gt;3&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;3&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>I kept another student(s) out of things on purpose, excluded him or her from my group of friends, or completely ignored him or her.</td>
<td>85.7&lt;sup&gt;1&lt;/sup&gt;</td>
<td>4.2&lt;sup&gt;1&lt;/sup&gt;</td>
<td>4.2&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;1&lt;/sup&gt;</td>
<td>4.2&lt;sup&gt;1&lt;/sup&gt;</td>
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<td></td>
<td>90.9&lt;sup&gt;2&lt;/sup&gt;</td>
<td>9.1&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;2&lt;/sup&gt;</td>
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<td>87.5&lt;sup&gt;3&lt;/sup&gt;</td>
<td>12.5&lt;sup&gt;3&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;3&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;3&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;3&lt;/sup&gt;</td>
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<tr>
<td>I hit, kicked, pushed, shoved around, or locked another student indoors.</td>
<td>85.7&lt;sup&gt;1&lt;/sup&gt;</td>
<td>8.3&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;1&lt;/sup&gt;</td>
<td>4.8&lt;sup&gt;1&lt;/sup&gt;</td>
<td>4.2&lt;sup&gt;1&lt;/sup&gt;</td>
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<td>95.5&lt;sup&gt;2&lt;/sup&gt;</td>
<td>4.5&lt;sup&gt;2&lt;/sup&gt;</td>
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<td>95.8&lt;sup&gt;3&lt;/sup&gt;</td>
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<td>4.2&lt;sup&gt;3&lt;/sup&gt;</td>
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<td>0.0&lt;sup&gt;3&lt;/sup&gt;</td>
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<tr>
<td>I spread false rumours about another student(s) and tried to make others dislike him or her.</td>
<td>95.8&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;1&lt;/sup&gt;</td>
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<td>95.8&lt;sup&gt;3&lt;/sup&gt;</td>
<td>4.2&lt;sup&gt;3&lt;/sup&gt;</td>
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<td>0.0&lt;sup&gt;3&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>I bullied another student(s) with mean names and comments about his or her race or colour.</td>
<td>91.7&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;1&lt;/sup&gt;</td>
<td>4.2&lt;sup&gt;1&lt;/sup&gt;</td>
<td>4.2&lt;sup&gt;1&lt;/sup&gt;</td>
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<td>95.8&lt;sup&gt;3&lt;/sup&gt;</td>
<td>4.2&lt;sup&gt;3&lt;/sup&gt;</td>
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<td>0.0&lt;sup&gt;3&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>I bullied another student(s) with mean names and comments about his or her religion.</td>
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<td>0.0&lt;sup&gt;1&lt;/sup&gt;</td>
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<td>0.0&lt;sup&gt;3&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>I made sexual jokes, comments, or gestures to another student(s).</td>
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<td>0.0&lt;sup&gt;1&lt;/sup&gt;</td>
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<td>I bullied another student(s) using a computer or e-mail messages or pictures.</td>
<td>91.7&lt;sup&gt;1&lt;/sup&gt;</td>
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<td>0.0&lt;sup&gt;1&lt;/sup&gt;</td>
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<td>0.0&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>I bullied another student(s) using a mobile phone.</td>
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<td>0.0&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;1&lt;/sup&gt;</td>
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<td>95.8&lt;sup&gt;3&lt;/sup&gt;</td>
<td>4.2&lt;sup&gt;3&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;3&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;3&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Notes:

1 = Autism Spectrum Disorders group (ASD) n=24
2 = Learning Disorder group (LD) n=22
3 = Control group n=24
Note: The following appendices (D, E, F, G, H) have been added to this dissertation to address revisions as suggested by my defense committee.
Appendix D: Correlations between parental reports and child reports

Pearson product correlations were used to examine the relationship between parent reports and child reports across types of bullying behaviour for victimization and bullying others. As displayed in Table D1, child reports for physical victimization were perfectly correlated with parent reports for the ASD group, SN group, and TD group. For social victimization, child reports were significantly related to parent reports for the SN and TD groups, but not for the ASD group. For verbal victimization, child reports were significantly related to parent reports for the ASD and TD groups, but not for the SN group. Due to a lack of variance for electronic victimization between the parent and child reports for the TD group (i.e., both parents and children had a score of zero) a correlation could not be computed. However, parent and child reports for electronic victimization were significantly related for the ASD group, but not the SN group.

For physically bullying others, child reports were significantly related to parent reports for the ASD group, but not for the SN or TD groups. Child and parent reports were perfectly correlated across all three groups for socially bullying others. For all three groups, no relationship was found between child reports and parent reports for verbally bullying others. Due to a lack of variance for electronically bullying others between the parent reports and child reports for the TD group (i.e., both parents and children had a score of zero) a correlation could not be computed. However, parent reports and child reports for electronically bullying others were perfectly correlated for the ASD group, but not the SN group.

In summary, in study 1 of the current research it was found that parental reports of bullying behavior for the adolescents with ASD or SN did not differ from child reports.
However, when examining the relationships between parental and child reports for these two groups, correlations reveal that some types of bullying behavior are more related than others. This suggests that parents might be more aware of some types of bullying behavior experienced by their child than others. For example, for the ASD group, perfect correlations emerged between parental and child reports for physical victimization, socially bullying others, and electronically bullying others, suggesting that parents are well aware of their child’s involvement in these types of bullying behavior. On the other hand, for this same group, no significant correlation was found between parental and child reports for being socially victimized. This lack of relationship may be due to difficulties adolescents with ASD have in recognizing this type of peer victimization; leading them, but not their parents, to under-report their experiences of peer victimization. This finding has been discussed on page 114 in the General Discussion.
Table D1. *Correlations between parental reports and child reports for being victimized and bullying others.*

<table>
<thead>
<tr>
<th></th>
<th>ASD</th>
<th>SN</th>
<th>TD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Victimized</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical</td>
<td>1.00**</td>
<td>1.00**</td>
<td>1.00**</td>
</tr>
<tr>
<td>Social</td>
<td>.29</td>
<td>.46*</td>
<td>.53**</td>
</tr>
<tr>
<td>Verbal</td>
<td>.55**</td>
<td>.34</td>
<td>.44*</td>
</tr>
<tr>
<td>Electronic</td>
<td>.53**</td>
<td>-.07</td>
<td>a</td>
</tr>
<tr>
<td><strong>Bullied Others</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical</td>
<td>.38*</td>
<td>-.05</td>
<td>-.06</td>
</tr>
<tr>
<td>Social</td>
<td>1.00**</td>
<td>1.00**</td>
<td>1.00**</td>
</tr>
<tr>
<td>Verbal</td>
<td>-.13</td>
<td>-.03</td>
<td>-.13</td>
</tr>
<tr>
<td>Electronic</td>
<td>1.00**</td>
<td>-.05</td>
<td>a</td>
</tr>
</tbody>
</table>

* p < .05; ** p < .01

*a* = could not be computed as both variables are constant; all scores = zero.

ASD = Autism Spectrum Disorder

SN = Special Needs Control Group

TD = Typically Developing Control Group
Appendix E: Additional hierarchical regression analyses for study 2

To determine whether the relationships between executive functioning and types of peer victimization were moderated by group membership, three hierarchical regression analyses were conducted. Interaction terms were first constructed between total BRIEF scores and group membership for the ASD and SN (LD and/or ADHD) groups. Prior to constructing the interaction terms, total BRIEF scores were centered by subtracting the variable mean from each score to address any problems of multi-collinearity (Aiken & West, 1991). Group membership was dummy-coded into two variables. For the first variable, ASD was coded as “1” and all other group memberships were coded as “0”. For the second variable, SN was coded as “1” and all other group memberships were coded as “0”. The dummy-coded variables were not centered based on the recommendations of Jaccard and Turrisi (2003). The possible interactions between group membership and total BRIEF scores (EF), for each of the three regressions, were of major interest. Therefore, these additional regression analyses were conducted in four (rather than three) steps in order to see if group membership on its own may be a unique predictor across the types of victimization.

In the first regression analysis, using physical victimization as the dependent variable, age and bullying others were entered in step 1 as covariates. As shown in Table E1, bullying others was a significant covariate, but not age. This step accounted for 8% of the total variance. In step 2 groups (ASD and SN) and were entered together. This produced a significant increment in the amount of variance, accounting for an additional 4.3%. In this step, the ASD group emerged as a unique predictor of physical victimization, with age and bullying others as significant covariates. In the third step, total BRIEF scores were entered. This accounted for an additional 4.2% of the total variance with total BRIEF scores emerging as a unique predictor and
age as a significant covariate. In this step the ASD group did not remain a unique predictor of physical victimization, suggesting that the relationship between ASD and physical victimization is accounted for by executive functioning. In the last step, the two interaction terms (total BRIEF scores X ASD; total BRIEF scores X SN) were entered into the equation. The entry of the interaction terms did not improve the model, nor did they emerge as significant predictors of physical victimization. During this step only age remained a significant covariate of physical victimization.

For the second regression analysis, with social victimization as the dependent variable, the same covariates/predictors were entered in the same order as for the first regression. In the first step, bullying others emerged as a significant covariate, but not age. This step accounted for 13.2% of the total variance. In the second step, entry of the two groups (ASD and SN) did not improve the model and only contributed an additional 1.2% to the total variance. Bullying others remained a significant covariate. In the third step, entry of total BRIEF scores significantly improved the model, adding 7% to the total variance and uniquely predicting social victimization. During this step bullying others continued to be a significant covariate. In the last step, entry of the two interaction terms did not significantly improve the model, nor did they emerge as significant predictors of social victimization (see Table E2).

For the third regression analysis, with verbal victimization as the dependent variable, the same covariates/predictors were entered in the same order as in the previous 2 regression analyses. In the first step, bullying others emerged as a significant covariate, but not age. This step accounted for 20.2% of the total variance. In the second step, entry of the two groups (ASD and SN) did not improve the model; however, bullying others remained a significant covariate. The entry of total BRIEF scores in step three added 2.8% to the total variance. In this step, total
BRIEF scores emerged as a unique predictor of verbal victimization and bullying others remained a significant covariate. In the last step, the entry of the two interaction terms did not significantly improve the model, nor did they emerge as unique predictors. During this step total BRIEF scores were not a unique predictor of verbal victimization; however, bullying others remained a significant covariate (see Table E3).

Taken together, these additional analyses confirm the relationship between EF and types of peer victimization (physical, social, and verbal). When looking at group membership as a possible predictor in step 2, ASD was a unique predictor for physical victimization, but not for social or verbal victimization. For physical victimization, when total BRIEF scores were entered in step three, they emerged as a unique predictor of physical victimization, but ASD did not. This finding suggests that while ASD adolescents may be at risk of physical victimization, their level of risk is dependent on whether or not they have difficulties in EF. Impairments in EF are not unique to ASD and the results of these analyses suggest that such impairments may contribute to the peer victimization experienced by other special needs populations. However, in looking at the amount of total variance explained by these additional regressions (16% to 22%), it is likely that EF is only one of a number of variables that might contribute to the elevated rates of peer victimization experienced by adolescents with ASD. For further discussion see page 128 of the General Discussion.
Table E1. Summary of hierarchical regression analysis for the effects of scores on the Behavior Rating Inventory of Executive Function Inventories (BRIEF) on physical victimization.

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>$\beta$</th>
<th>Semi-Partial Correlations</th>
<th>Adj$R^2$</th>
<th>Adj$\Delta R^2$</th>
<th>$\Delta F$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
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<td>-.19</td>
<td>.080</td>
<td>.080</td>
<td>4.78*</td>
</tr>
<tr>
<td></td>
<td>Bullying Others*</td>
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<td>.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>Age*</td>
<td>-.223</td>
<td>-.22</td>
<td>.123</td>
<td>.043</td>
<td>3.06</td>
</tr>
<tr>
<td></td>
<td>Bullying Others*</td>
<td>.229</td>
<td>.23</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>ASD Group*</td>
<td>.255</td>
<td>.23</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>SN Group</td>
<td>.009</td>
<td>.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
<td>Age*</td>
<td>-.231</td>
<td>-.23</td>
<td>.165</td>
<td>.042</td>
<td>5.18*</td>
</tr>
<tr>
<td></td>
<td>Bullying Others</td>
<td>.193</td>
<td>.19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ASD Group</td>
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<td>.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SN Group</td>
<td>-.099</td>
<td>-.08</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total BRIEF Scores*</td>
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<td>.22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 4</td>
<td>Age*</td>
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<td>-.21</td>
<td>.159</td>
<td>-.006</td>
<td>0.71</td>
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<td>Bullying Others</td>
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<td>.17</td>
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</tr>
<tr>
<td></td>
<td>ASD Group</td>
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<td>.01</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>SN Group</td>
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<td>-.04</td>
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<tr>
<td></td>
<td>Total BRIEF Scores</td>
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<td>.07</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>ASD X Total BRIEF Scores</td>
<td>.209</td>
<td>.12</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SN X Total BRIEF Scores</td>
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<td>.04</td>
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</tr>
</tbody>
</table>

Note. * $p < .05$

ASD = Autism Spectrum Disorders; SN = Special Needs
Table E2. *Summary of hierarchical regression analysis for the effects of scores on the Behavior Rating Inventory of Executive Function Inventories (BRIEF) on social victimization.*

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>$\beta$</th>
<th>Semi-Partial Correlations</th>
<th>Adj$R^2$</th>
<th>Adj$\Delta R^2$</th>
<th>$\Delta F$</th>
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<tbody>
<tr>
<td></td>
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</tr>
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<td>Step 1</td>
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<td>-.15</td>
<td>.132</td>
<td>.132</td>
<td>7.62**</td>
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<tr>
<td></td>
<td>Bullying Others**</td>
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<td>.36</td>
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<tr>
<td>Step 2</td>
<td>Age</td>
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<td>-.16</td>
<td>.144</td>
<td>.012</td>
<td>1.58</td>
</tr>
<tr>
<td></td>
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<td>.34</td>
<td></td>
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<tr>
<td></td>
<td>SN Group</td>
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<td>-.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
<td>Age</td>
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<td>-.17</td>
<td>.214</td>
<td>.070</td>
<td>8.36**</td>
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<td>Bullying Others**</td>
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<td>.29</td>
<td></td>
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<tr>
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<td>ASD Group</td>
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<td>-.05</td>
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<tr>
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<td>SN Group</td>
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</tr>
<tr>
<td></td>
<td>Total BRIEF Scores**</td>
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<td>.27</td>
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</tr>
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<td>Step 4</td>
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<td>-.16</td>
<td>.224</td>
<td>.010</td>
<td>1.54</td>
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<td>Bullying Others**</td>
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<td>.27</td>
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<td>-.06</td>
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<tr>
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<td>Total BRIEF Scores</td>
<td>.129</td>
<td>.06</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>ASD X Total BRIEF Scores</td>
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<td>.17</td>
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</tr>
<tr>
<td></td>
<td>SN X Total BRIEF Scores</td>
<td>.109</td>
<td>.08</td>
<td></td>
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</tr>
</tbody>
</table>

Note. * $p < .05$, ** $p < .01$

ASD = Autism Spectrum Disorders; SN = Special Needs
Table E3. Summary of hierarchical regression analysis for the effects of scores on the Behavior Rating Inventory of Executive Function Inventories (BRIEF) on verbal victimization.

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>$\beta$</th>
<th>Semi-Partial Correlations</th>
<th>$\text{Adj}R^2$</th>
<th>$\text{Adj}\Delta R^2$</th>
<th>$\Delta F$</th>
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</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1</td>
<td>Age</td>
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<td>.202</td>
<td>.202</td>
<td>11.98**</td>
</tr>
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<td></td>
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</tr>
<tr>
<td>2</td>
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<td>-.14</td>
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<td>.44</td>
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</tr>
<tr>
<td></td>
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</tr>
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<tr>
<td>3</td>
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<td>.41</td>
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<td></td>
</tr>
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</tr>
<tr>
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<tr>
<td>4</td>
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<td>.217</td>
<td>.004</td>
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<tr>
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<td>Bullying Others**</td>
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<td>Total BRIEF Scores</td>
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<td>.01</td>
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<tr>
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<td>ASD X Total BRIEF</td>
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<td>Scores</td>
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<td>.07</td>
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</tr>
</tbody>
</table>

Note. * $p < .05$, ** $p < .01$

ASD = Autism Spectrum Disorders; SN = Special Needs
Appendix F: Correlations between types of victimization and the Behavioral Regulation Inventory’s sub-domains and Metacognition Inventory’s sub-domains on the Behavior Rating Inventory of Executive Function (BRIEF).

Utilizing the full sample (N = 88), Pearson product correlations were used to examine the relationships between types of victimization (child-reports) and the Behavioral Regulation Inventory’s sub-domains (Inhibit, Shift, and Emotional Control) and Metacognition Inventory’s sub-domains (Initiate, Working Memory, Plan and Organize, Organize Materials, and Monitor) on the BRIEF. As displayed in Table F1, physical victimization was significantly related to all BRIEF sub-domains with the exception of Organize Materials and Monitor. All of the nine sub-domains were significantly related to social victimization; however, only the Shift and Emotional Control sub-domains were significantly related to verbal victimization. No significant correlations were found between any of the BRIEF sub-domains and electronic victimization. These additional findings are discussed on page 125 in the General Discussion.
Table F1. Correlations between the types of self-reported victimization and the Behavioral Regulation Inventory’s sub-domains and Metacognition Inventory’s sub-domains on the BRIEF.

<table>
<thead>
<tr>
<th>Behavioral Regulation</th>
<th>Metacognition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Initiate</td>
</tr>
<tr>
<td>Inhibit</td>
<td>Shift</td>
</tr>
<tr>
<td>Physical</td>
<td>.21*</td>
</tr>
<tr>
<td>Social</td>
<td>.22*</td>
</tr>
<tr>
<td>Verbal</td>
<td>.12</td>
</tr>
<tr>
<td>Electronic</td>
<td>-.04</td>
</tr>
</tbody>
</table>

* * p < .05; ** p < .01
Appendix G: Correlation matrix of age, bullying others, IQ, pragmatic judgment, subscales of the Behavior Rating Inventory of Executive Functioning (BRIEF), and types of victimization

This appendix contains a revised correlation matrix with regards to Table 3.2 presented in Chapter 3. This revised matrix includes covariates (age and bullying others) that are not listed in Table 3.2. As displayed in Table G1, age was only significantly related to the Pragmatic Judgment scale; bullying others was related to all four types of victimization. Although age was not significantly related to any type of bullying, I chose to include it as a covariate in the hierarchical regression analyses perform in study 2. This decision was based on the age of my sample and previous findings that clearly show a peak in bullying behavior during early adolescence followed by decreased rates by the end of secondary school. However, longitudinal research has shown that, for a small portion of students, bullying behavior remains stable and persists across the secondary school years. For a discussion on the developmental trajectory of bullying behavior see General Introduction, page 2.

As shown by the regression analyses conducted in study 2, age was a significant covariate for physical victimization, but not for verbal victimization or social victimization. Although physical victimization decreased with age, verbal victimization and social victimization did not, suggesting that for some special needs populations, victimization remains stable and persists across adolescence.
Table G1. *Correlation matrix of age, bullying others, IQ, pragmatic judgment, subscales of the Behavior Rating Inventory of Executive Functioning (BRIEF), and types of victimization (N=88)*

<table>
<thead>
<tr>
<th></th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
</tr>
</thead>
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<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Bullying Others</td>
<td>.01</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. IQ</td>
<td>-.04</td>
<td>-.07</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Pragmatic Judgment</td>
<td>.33**</td>
<td>.06</td>
<td>.42**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Total BRIEF Scores</td>
<td>.13</td>
<td>.16</td>
<td>-.15</td>
<td>-.22*</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Physical Victimization</td>
<td>-.15</td>
<td>.33**</td>
<td>-.03</td>
<td>-.05</td>
<td>.32**</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Social Victimization</td>
<td>-.09</td>
<td>.42**</td>
<td>.06</td>
<td>.01</td>
<td>.34**</td>
<td>.77**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>8. Verbal Victimization</td>
<td>-.07</td>
<td>.51**</td>
<td>-.09</td>
<td>-.05</td>
<td>.22*</td>
<td>.63**</td>
<td>.77**</td>
<td>-</td>
</tr>
<tr>
<td>9. Electronic Victimization</td>
<td>-.08</td>
<td>.33**</td>
<td>.00</td>
<td>.00</td>
<td>.08</td>
<td>.17</td>
<td>.25*</td>
<td>.38**</td>
</tr>
</tbody>
</table>

* = p < .05; ** = p < .01
Appendix H: Reversed Hierarchical Regressions

To determine whether the relationships found between executive function (EF) and types of victimization (physical, social, and verbal) in study 2 might be bi-directional, three reversed hierarchical regression analyses were conducted. For each of the three reversed regression analyses, EF (total BRIEF scores) was the dependent variable and age and bullying others were covariates (entered in step 1). Group membership was entered in step 2 (ASD and ADHD/LD), and type of victimization was entered in step 3. Because the focus of these analyses was on bi-directionality, interaction terms between types of victimization and group membership were not entered into the regressions.

In the first regression analysis, using EF as the dependent variable, age and bullying others were entered in step 1. As shown in Table H1, neither of these variables emerged as a significant covariate. In step 2, groups (ASD and SN) were entered together. This produced a significant increment in the amount of variance, accounting for an additional 38.4%. In this step, both ASD and SN group membership emerged as unique predictors of EF. In the third step, physical victimization was entered. This accounted for an additional 2.8% of the total variance and physical victimization emerged as a unique predictor of EF. In this step both ASD and SN group membership remained unique predictors.

For the second regression analysis, with EF as the dependent variable, age and bullying others did not emerge as significant covariates (step 1). In the second step, entry of the two groups (ASD and SN) did improve the model and contributed an additional 38.4% to the total variance. In this step, both ASD and SN group membership emerged as unique predictors of EF. In the third step, entry of social victimization accounted for an additional 4.9% of the total variance. Social victimization emerged as a unique predictor of EF. In this step both ASD and SN group membership remained unique predictors (see Table H2).
A similar pattern was found in the third regression analysis. With EF as the dependent variable, age and bullying others did not emerged as significant covariates (step 1). In the second step, entry of the two groups (ASD and SN) did improve the model and contributed an additional 38.4% to the total variance. In this step, both ASD and SN group membership emerged as unique predictors of EF. In the third step, entry of verbal victimization accounted for an additional 2% of the total variance. Verbal victimization emerged as a unique predictor of EF (just reaching significance; $p = .05$). In this step both ASD and SN group membership remained unique predictors (see Table H3).

Taken together, the findings from the reversed hierarchical regressions confirm a bi-directional relationship between EF and types of bullying behaviors (e.g., physical, social, and verbal). Additionally, in examining the semi-partial correlations, these findings indicate that EF was more strongly related to the ASD group than the SN group in the current research. This is consistent with the finding in study 2 that adolescent boys with ASD had more difficulties in EF than both the SN group and TD control group. Results from these additional analyses are discussed in the General Discussion on page 112 with regards to bi-directionality of the relationship between EF and peer victimization.
Table H1. Summary of hierarchical regression analysis for the effects of physical victimization on total child scores on the Behavior Rating Inventory of Executive Function (BRIEF).

<table>
<thead>
<tr>
<th>Variable</th>
<th>β</th>
<th>Semi-Partial Correlations</th>
<th>AdjR²</th>
<th>AdjΔR²</th>
<th>ΔF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Age</td>
<td>.105</td>
<td>.10</td>
<td>.014</td>
<td>.014</td>
<td>1.60</td>
</tr>
<tr>
<td>Bullying Others</td>
<td>.161</td>
<td>.16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.027</td>
<td>.03</td>
<td>.398</td>
<td>.384</td>
<td>28.08**</td>
</tr>
<tr>
<td>Bullying Others</td>
<td>.125</td>
<td>.12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASD Group**</td>
<td>.671</td>
<td>.61</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SN Group**</td>
<td>.366</td>
<td>.34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>.07</td>
<td>.426</td>
<td>.028</td>
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</tr>
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<td></td>
</tr>
<tr>
<td>SN Group**</td>
<td>.365</td>
<td>.34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Victimization*</td>
<td>.202</td>
<td>.18</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. * p < .05, ** p < .01

ASD = Autism Spectrum Disorders; SN = Special Needs
Table H2. Summary of hierarchical regression analysis for the effects of social victimization on total child scores on the Behavior Rating Inventory of Executive Function (BRIEF).

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>β</th>
<th>Semi-Partial Correlations</th>
<th>AdjR²</th>
<th>AdjΔR²</th>
<th>ΔF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Age</td>
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<td>.10</td>
<td>.014</td>
<td>.014</td>
<td>1.60</td>
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<td></td>
<td>Bullying Others</td>
<td>.161</td>
<td>.16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Age</td>
<td>.027</td>
<td>.03</td>
<td>.398</td>
<td>.384</td>
<td>28.08**</td>
</tr>
<tr>
<td></td>
<td>Bullying Others</td>
<td>.125</td>
<td>.12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ASD Group**</td>
<td>.671</td>
<td>.61</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SN Group**</td>
<td>.366</td>
<td>.34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Age</td>
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<td>.07</td>
<td>.447</td>
<td>.049</td>
<td>8.36**</td>
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<td>.03</td>
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<td>.56</td>
<td></td>
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<td>SN Group**</td>
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<td>.34</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>Social Victimization**</td>
<td>.225</td>
<td>.23</td>
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</tbody>
</table>

Note. * p < .05, ** p < .01

ASD = Autism Spectrum Disorders; SN = Special Needs
Table H3. Summary of hierarchical regression analysis for the effects of verbal victimization on total child scores on the Behavior Rating Inventory of Executive Function (BRIEF).

<table>
<thead>
<tr>
<th>Variable</th>
<th>β</th>
<th>Semi-Partial Correlations</th>
<th>AdjR^2</th>
<th>AdjΔR^2</th>
<th>ΔF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Age</td>
<td>.105</td>
<td>.10</td>
<td>.014</td>
<td>.014</td>
<td>1.60</td>
</tr>
<tr>
<td>Bullying Others</td>
<td>.161</td>
<td>.16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.027</td>
<td>.03</td>
<td>.398</td>
<td>.384</td>
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</tr>
<tr>
<td>Bullying Others</td>
<td>.125</td>
<td>.12</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>ASD Group**</td>
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<td>.61</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SN Group**</td>
<td>.366</td>
<td>.34</td>
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</tr>
<tr>
<td><strong>Step 3</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>.418</td>
<td>.020</td>
<td>3.94</td>
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<td>ASD Group**</td>
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</tr>
<tr>
<td>SN Group**</td>
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<td>.33</td>
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<tr>
<td>Verbal Victimization*</td>
<td>.184</td>
<td>.16</td>
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</tr>
</tbody>
</table>

Note. * p = .05, ** p < .01

ASD = Autism Spectrum Disorders; SN = Special Needs
OFFICE OF RESEARCH

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Email research@trentu.ca
Web www.trentu.ca/research

Patricia Kloosterman
Psychology Dept.
G2

October 21 2008

File #: 20881
Title: Profiles of Bullying and Victimization in Adolescents with Special Needs

Dear Ms. Kloosterman,

The Research Ethics Board (REB) has given approval to your proposal entitled "Profiles of Bullying and Victimization in Adolescents with Special Needs".

Please add a running footer to your consent form, with the date of Trent REB approval and consent revision number (e.g., 01-JAN-08, Version 2), so that the consent form used can be easily identified in future.

In accordance with the Tri-Council Guidelines (article D.1.6) your project has been approved for one year. If this research is ongoing past that time, please submit a Research Ethics Annual Update form (2 copies), available online under the Research Office website. If the project is completed by that time please contact the Research Office so they can record the completion.

Please note that you are reminded of your obligation to advise the REB before implementing any amendments or changes to the procedures of your study that might affect the human participants. You are also advised that any adverse events must be reported to the REB.

On behalf of the Trent Research Ethics Board, I wish you success with your research.

With best wishes,

Gillian Balfour, Ph.D.
Associate Professor, Department of Sociology
Chair, Research Ethics Board

Phone: (705) 748-1011 ext. 7807, Fax: (705) 748-1213
Email: gillianbalfour@trentu.ca

cc: Karen Mauro, Office of Research
November 4, 2008

Ms. Patricia Kloosterman
Department of Psychology
Humphrey Hall
Queen's University

Dear Ms. Kloosterman,

Study Title: Emotional Intelligence, Pragmatic Language and Executive Functioning: Predictors of Bullying and Victimization in Adolescents with Special Educational Needs

Co-Investigators: Dr. Elizabeth Kelly, Dr. James Parker

I am writing to acknowledge receipt of your recent ethics submission. We have examined the protocol and consent form for your project (as stated above) and consider it to be ethically acceptable. This approval is valid for one year from the date of the Chair's signature below. This approval will be reported to the Research Ethics Board. Please attend carefully to the following list of ethics requirements you must fulfill over the course of your study:

➢ Reporting of Amendments: If there are any changes to your study (e.g. consent, protocol, study procedures, etc.), you must submit an amendment to the Research Ethics Board for approval. (see http://www.queensu.ca/vpr/recb.htm).

➢ Reporting of Serious Adverse Events: Any unexpected serious adverse event occurring locally must be reported within 2 working days or earlier if required by the study sponsor. All other serious adverse events must be reported within 15 days after becoming aware of the information.

➢ Reporting of Complaints: Any complaints made by participants or persons acting on behalf of participants must be reported to the Research Ethics Board within 7 days of becoming aware of the complaint. Note: All documents supplied to participants must have the contact information for the Research Ethics Board.

➢ Annual Renewal: Prior to the expiration of your approval (which is one year from the date of the Chair's signature below), you will be reminded to submit your renewal form along with any new changes or amendments you wish to make to your study. If there have been no major changes to your protocol, your approval may be renewed for another year.

Yours sincerely,

[Signature]

Chair, Research Ethics Board

Date: Nov 6, 2008

ORIGINAL TO INVESTIGATOR - COPY TO DEPARTMENT HEAD - COPY TO HOSPITALS /P&T (IF APPLICABLE) - FILE COPY

Study Code: PSYC-086-08

➢ Investigators please note that if your trial is registered by the sponsor, you must take responsibility to ensure that the registration information is accurate and complete