

# THE IMPACT OF INFORMATION SOURCE ON MIDDLE SCHOOL STUDENTS' ATTITUDES TOWARDS PEERS WITH AUTISM

by

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(Under the Direction of Jonathan M. Campbell)

## ABSTRACT

Inclusion of students with autism spectrum disorders (ASD) into mainstream classrooms is occurring at an increasing rate in schools. Research encourages the use of specific interventions, such as peer-mediated techniques, to foster the successful inclusion of students with ASDs. The potential beneficial impact of typical peers warrants further understanding of the effects of peer training and education about autism. Relevant literature is reviewed, including empirical research regarding peer-mediated interventions, peer attitudes towards disability, theoretical constructs of attitude, and interventions designed to promote attitude change. Educational interventions are emphasized in the review, and conceptualized as an application of social persuasion theory (Campbell, 2006). The purpose of the current study is to add to the research literature regarding educational interventions about autism for typical peers. The study's goal was to investigate the role of information source on middle school students' cognitive attitudes and behavioral intentions towards students with autism. Participants ( $N=773$  middle school students) received information about a hypothetical student with autism from four possible sources: Videotape, Teacher, Mother, and Doctor. Measures of the students' cognitive and conative attitudes and their perception of Source were collected. Analysis of variance, Multivariate analysis of variance, and regression analyses were used to analyze the effect of Source on the students'

attitudes, and their perception of the source's credibility. Results suggest that using an in-vivo source is more effective than a videotaped message, and teachers are considered less credible than all of the remaining three sources, including videotape.

INDEX WORDS: autism, inclusion, middle school students, attitudes, educational intervention, social persuasion theory

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## CHAPTER 1

### INTRODUCTION

Autism Spectrum Disorders (ASDs) constitute a group of neurodevelopmental disabilities characterized by impairments in social interaction, communication, and restricted interests/repetitive behaviors. Included within the autism spectrum are Autism, Asperger's Disorder, Rett's Disorder, Childhood Disintegrative Disorder, and Pervasive Developmental Disorder—Not Otherwise Specified, with Autism being the most prevalent among the group (American Psychiatric Association, 2000). Recent epidemiological studies evidence an increased prevalence of ASDs, with the occurrence of autism estimated to be 10 times higher than it was in the 1980s and early 1990s (Yeargin-Allsopp et al., 2003). Statistical trends in special education data reiterate this pattern; current records show that the percentage of students served under the eligibility category of autism is now ten times what it was just one decade ago (<https://www.ideadata.org/docs/PartBTrendData>). Educational legislation such as the Individuals with Disabilities Education Improvement Act of 2004 (IDEIA, 2004), mandates that all public school children are educated within the least restrictive environment for their individual educational needs (P.L. 108-446, 2004). Such legislation has resulted in an increased effort to grant students with special needs access to general education classrooms. Given both the increase in the prevalence of autism, and the established tenets of educational policy, the conclusion can be made that more students with autism (SWA) are being included in mainstream classrooms than in the past.

Despite the increase in inclusive education for SWA, research has shown that physical placement in a mainstream classroom is not sufficient to effectively integrate these students (Myles, Simpson, Ormsbee, & Erickson, 1993). The literature consistently calls for individualized programming to ensure the successful integration of SWA (Harrower & Dunlap, 2001; Simpson, Boer-Ott, & Smith-Myles, 2003). Methods such as teacher prompting and peer-mediated interventions are suggested techniques for this process. Peer training is particularly warranted given that the pervasive social and communication problems exhibited by SWA are likely to preclude peer acceptance and integration. Enlisting the help of typical peers as interventionists is more socially valid than using adults; therefore, interaction between SWA and their typical peers is thought to create a natural context in which social behaviors can be learned and developed. Further, peers are inexpensive interventionists and readily available compared to the behavioral therapists, paraprofessionals, and other adults often hired and trained to work with SWA. A number of different peer-mediated techniques have been reviewed in autism intervention literature (Harrower & Dunlap, 2001; McConnell, 2002; Rogers, 2000), and several have garnered empirical support such as peer tutors/buddies, class-wide peer tutoring, and peer networks.

Despite the increase in inclusive education for SWA, and the subsequent emphasis placed on peer-based interventions, research has demonstrated that peers report negative attitudes toward unfamiliar SWA (Campbell, 2005; Campbell, Ferguson, Herzinger, Jackson, & Marino, 2004; Swaim & Morgan, 2001). The attitudes of typical peers towards SWA have been linked to their willingness to volunteer in peer-mediated intervention and the more positive the peers' attitudes were the more willing they were to volunteer (Carter, Hughes, Copeland, & Breen, 2001). Given the potential impact of negative peer attitudes towards inclusion, research has

examined ways to ameliorate negative attitudes of typical peers towards a variety of disorders. Various interventions have been developed to encourage attitude change, such as video-based educational interventions (Holtz & Tessman, 2007), structured contact with students with disabilities (Maras & Brown, 1996), and providing descriptive and explanatory information about a target child (Campbell et al., 2004). Educational interventions are specifically designed to increase knowledge and mitigate inaccurate beliefs and/or negative stereotypes through presenting information about a disability. Although educational interventions have shown positive effects in reducing negative peer attitudes towards children with intellectual disabilities (Bak & Siperstein, 1987; Siperstein & Chatillon, 1982), research regarding children with autism has been inconsistent (Campbell et al., 2004; Swaim & Morgan, 2001). In order to account for these inconsistencies, Campbell (2006) recently presented a conceptualization of peer education about SWA as “a unique application of social persuasion to produce attitude change.” Campbell reviewed educational interventions for autism according to the following components: message, source, medium, and audience. His review explicitly highlights a deficiency in research regarding one of the persuasion variables, the *source* that provides the information to the students. This specific gap in the autism literature is especially relevant given that multiple sources, such as parents, teachers, and other professionals, are often called upon to intervene for SWA. Further, research in persuasive communication has shown that characteristics of the source of the message can impact the persuasiveness of the information (Eagly & Chaiken, 1984; Franzoi, 2003; Pornpitakpan, 2004).

Morton and Campbell (2007) investigated the impact of multiple information sources on elementary school students' initial attitudes towards autism, as well as interactions between source and receiver characteristics (i.e., age and gender). Results showed that students did in fact

report different attitudes toward an unfamiliar child with autism depending on which source delivered the information, and interactive effects of source and receiver characteristics were also found. The purpose of my dissertation is to add to the research literature regarding educational interventions for peer attitudes towards SWA by investigating the impact of source on an older sample of students. Specifically, the effects of information source on the attitudes of middle school students towards a peer with autism will be investigated, with particular focus on the relationship between the students' perceptions of the source and two outcome variables: their cognitive attitudes and behavioral intentions towards a SWA.

I have chosen the two paper option for my dissertation. In the first paper, I present a review of literature that illustrates the importance of typical peers in the inclusion of SWA, and describes interventions designed to improve peers' negative attitudes towards these students. Empirical evidence regarding peer-mediated interventions for SWA, such as peer tutoring and peer networks, is presented, as well as theoretical conceptualization of attitude formation and change. A review of attitude modification techniques regarding a range of disabilities is discussed, with a specific focus on educational interventions regarding SWA.

In the second paper, following a brief review of the literature, I present a study that evaluated the effect of source on middle school students' cognitive attitudes and behavioral intentions towards a hypothetical student with autism. The second paper describes the methodology, results, and conclusions of my empirical research.

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## CHAPTER 2

# TYPICAL PEERS AND THE INCLUSION OF STUDENTS WITH AUTISM (SWA): PEER-MEDIATED INTERVENTIONS, PEER ATTITUDES, AND INTERVENTIONS FOR PEER ATTITUDE CHANGE<sup>1</sup>

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<sup>1</sup> Cavanagh, S.E. and Campbell, J.M. (2008). Typical peers and the inclusion of students with autism: Peer-mediated interventions, peer attitudes, and interventions for peer attitude change. To be submitted to *Research in Developmental Disabilities*.

## ABSTRACT

The growing prevalence of autism spectrum disorders and the established tenets of educational policy have led to more frequent inclusion of students with autism (SWA) into general education settings. Given the pervasive social and communicative deficits of SWA, passive placement of SWA into mainstream classrooms is often not sufficient for improving social or communicative problems. Research has encouraged the use of peer-mediated interventions to foster successful inclusion; however, the efficacy of peer-mediated intervention is dependent on the motivations and actions of the typical peer. Despite their potential as interventionists, typical peers often hold negative attitudes towards SWA. Negative peer attitudes may preclude successful integration of SWA into general educational settings. In this paper, relevant research is reviewed, including literature concerning peer-mediated interventions, peer attitudes towards students with disabilities, theoretical constructs of attitude, and interventions designed to promote positive peer attitudes. The research regarding educational interventions about SWA is highlighted; and peer education is conceptualized as a process of persuasive communication (Campbell, 2006). Based on the theoretical framework of persuasion, the impact of specific variables (such as message, source, and audience) on the efficacy of educational interventions is discussed. Information source is identified as a variable that warrants further research in educational interventions about SWA. The effect of source has practical implications given that a wide variety of people (e.g. teachers, parents, doctors) may be called upon to introduce SWA to their typical peers. Research questions and hypotheses regarding the impact of information source on the cognitive and conative attitudes of typical students are presented.

INDEX WORDS:     autism, inclusion, peer interventions, peer attitudes, educational intervention, persuasive communication

Autism, or “Autistic Disorder,” is a developmental disorder characterized by impairments in three areas of functioning: social interaction, language and communication skills, and unusual interests and/or behaviors (American Psychiatric Association [APA], 2000). Identification often occurs at a very young age; diagnostic criteria specifies that autistic impairments, such as difficulties with reciprocal social interaction, delayed communication, and lack of imaginative play, occur prior to the age of three. Within the realm of social impairments, children with autism may appear oblivious to others, and often show little or no desire to establish friendships. Communication is often characterized by language impairments and/or idiosyncratic use of language (e.g., echolalic speech), and social interaction is further complicated by the inability to understand or execute nonverbal behaviors (e.g., eye contact, hand gestures).

Although impairments must be demonstrated in all three domains for formal diagnosis, autism manifests in heterogeneous ways across individuals. The level of impairment or severity of the disorder varies as a function of individual factors such as cognitive ability and developmental level (APA, 2000). In fact, differential diagnoses have resulted in the identification and classification of a range or “spectrum” of disorders that share core autistic impairments. Autism Spectrum Disorders (ASDs) include Autism, Asperger’s Disorder, and Pervasive Developmental Disorder—Not Otherwise Specified. Although all three disorders are characterized by deficits in social behavior, communication skills, and show restricted and repetitive interests, they differ in the nature and severity of the symptoms, the age of onset, and level of functional impairment. These three disorders, in addition to Rett’s Disorder and Childhood Disintegrative Disorder, represent the broad diagnostic category of Pervasive Developmental Disorders.

ASDs have increased in prevalence over the last twenty years, with recent epidemiological studies estimating the occurrence of autism to be 10 times higher than it was in the 1980s and early 1990s (Yeargin-Allsopp et al., 2003). The Centers for Disease Control and Prevention conducted a multi-site surveillance network study which found the prevalence of ASDs averaged 6.7 per 1,000 children aged 8 years in the year 2000 (Centers for Disease Control and Prevention [CDC], 2007). Data were collected from 14 sites again in 2002, and the prevalence rate of ASDs remained stable (6.6 per 1,000 children).

Given that approximately 1 out of every 150 children is diagnosed with an ASD, more students are entering our school systems with these diagnoses than in the past. Similar to epidemiological data, statistical trends in special education data reiterate increased prevalence of ASDs. Autism was established as a category of special education eligibility in the 1991-1992 school year, with eligibility guidelines aligned closely with psychiatric diagnostic definitions. Newschaffer and colleagues (2005) analyzed data provided by the Department of Education, Office of Special Education Programs (OSEP), on children served under the eligibility category of autism specifically. The evidence shows higher prevalence rates for younger birth cohorts, which suggests that ASD prevalence is increasing with time. According to current education statistics, the percentage of students served under the eligibility category of autism is five times larger than it was just 10 years ago (<https://www.ideadata.org/docs/PartBTrendData>).

### *Inclusive education of students with autism (SWA)*

One of the major tenets of our special education system today is to provide a “free and appropriate public education” for students with special needs within the “least restrictive environment” (Public Law (P.L.) 92-142, 1975). The Education for All Handicapped Children

Act adopted in 1975 and its subsequent revisions, the Individuals with Disabilities Education Act (IDEA; 1997) and the Individuals with Disabilities Education Improvement Act of 2004 (IDEIA; 2004), mandate that appropriate public education for students with disabilities take place in the most integrated environments possible (P.L. 105-17, 1997; P.L. 108-446, 2004). Such legislation has resulted in an increased effort to grant special education students access to general education classrooms. This process has been given several names, such as inclusion, integration, mainstreaming, inclusive education, and the like (Cook, 2001; Monsen & Frederickson, 2004; Scruggs & Mastropieri, 1996). Although some authors differentiate between the terms described above (e.g., Mesibov & Shea, 1996), all terms share the common premise that inclusion/integration involves physically placing students with special needs in general education settings, in some capacity.

There has been some controversy surrounding the issue of including SWA within public education settings. Proponents argue that inclusion provides an opportunity for SWA to develop social skills and enhance academic learning via interacting with typically developing peers. Prior research has documented the benefits of inclusive education for students with other special education needs, such as intellectual disabilities, in the domains of social competence and academic achievement (Freeman & Alkin, 2000). Overall, however, empirical support for positive social and academic outcomes is both inconsistent and insufficient for SWA (Harrower & Dunlap, 2001; Mesibov & Shea, 1996). SWAs have pervasive social communication symptoms that preclude some of the benefits of inclusion (Mesibov & Shea; Ochs, Kremer-Sadlik, Solomon, & Sirota, 2001). For example, social deficits and behavioral excesses exhibited by SWA lead to social isolation and rejection (Koegel, Koegel, Hurley, & Frea, 1992). In

addition, many SWA show heightened sensitivity to sensory information, which may make a typical classroom distractive and overwhelming.

Borrowing from principles of effective behavioral intervention for SWA, the growing literature examining how best to include SWA consistently calls for thoughtful and individualized programming (Harrower & Dunlap, 2001; Simpson, Boer-Ott, & Smith-Myles, 2003). For example, research has shown that physical placement alone is not sufficient to successfully integrate SWA. Myles, Simpson, Ormsbee, and Erickson (1993) examined the frequency of social interactions for preschool children with autism enrolled in a classroom with typical peers versus a special education setting. No significant difference in the amount of interactions was found between the two conditions. The authors concluded that physical integration with general education students will not spontaneously generate social interaction; therefore, successful social inclusion for SWA depends upon implementing intervention methods such as teacher prompting and, in particular, peer training.

#### *The role of peers in inclusion of SWA*

Two conclusions seem warranted in light of the findings presented above. First, given the increase in students classified with autism, and current special education regulations and legislation, it can be determined that SWA are being included within general education classrooms more frequently than in the past. Education statistics support this conclusion. For example, in 2004, 29% of students served under the special education eligibility of “autism” spent less than 20% of their school day outside of the general education classroom; this statistic rose to 32% in 2006 (<https://www.ideadata.org/PartBReport.asp>). Second, due to the pervasive social and communication problems exhibited by SWA, peer-based intervention is particularly warranted for successful inclusion.

The foci of peer-mediated interventions are to train typical peers to: (a) initiate social and/or academic interactions with SWA and (b) reinforce appropriate responses to their initiations. Therefore, peers provide opportunities for the target children to engage in social behaviors, and they are trained to modify the child's response using behavioral techniques such as differential reinforcement (most often praise).

There are several benefits to using peers as interventionists. First, peers are more socially valid social partners for SWA than adults. Peer-mediated interventions allow SWA improvement of social skills and friendship development to occur within a natural context (i.e., actual social interactions with typical peers). Opportunities for generalization of these social skills also increase, because peer interaction occurs across a variety of settings such as the playground, the lunchroom, or after-school recreational activities. It has been suggested that peer-mediated strategies are more effective over time because they allow SWA to increase their independence in a way that closely matches their peers (Harrower & Dunlap, 2001). In fact, research has shown that increases in social interactions with adult partners do not generalize well to peer partners (Rogers, 2000). In a sense, using peer-based intervention approaches saves a step; it alleviates the need to transfer adult-initiated social responding to peer-initiated responding.

An additional benefit of using peers as interventionists is that they are readily available and inexpensive. Hiring behavioral therapists, or training teachers and paraprofessionals to work with SWA, can be expensive and time-consuming. It is improbable that staff-to-student ratios will ever equal student-to-student ratios within an inclusive setting, and in any given general education classroom there are numerous peers that can be trained to prompt, shape, or model appropriate behaviors for SWA. Furthermore, research has shown that serving as peer-mediators for student with disabilities can lead to positive outcomes for typical peers, such an increase in



academic engagement, assignment completion, and classroom participation (Cushing & Kennedy, 1997).

### *Peer-based interventions for SWA*

Peer interventions may take a variety of forms, and several different peer-mediated techniques have been reviewed in autism intervention literature (Harrower & Dunlap, 2001; McConnell, 2002; Rogers, 2000). Some of the strategies and interventions that have garnered empirical support for SWA include peer tutors/buddies, class-wide peer tutoring, and peer networks. In order to illustrate the role of peers in these strategies, it is helpful to define each technique and review findings in the literature.

*Peer tutoring.* One of the most widely researched peer-based interventions is peer tutoring, which typically involves student dyads in which the typical peer takes an instructive role and provides assistance and feedback for the student with autism (Harrower & Dunlap, 2001). Peer tutoring strategies have been found to be effective for increasing social interaction for SWA across a range of ages. For example, McGee, Almeida, Sulzer-Azaroff, and Feldman (1992) examined the effectiveness of a peer-tutoring program within an integrated preschool setting. Three children with autism were each paired with one typically developing peer in their class. The typical peers in each dyad were trained to model appropriate social interaction during free play. Peers were also instructed to promote incidental teaching for SWA through a sequence of behaviors: (a) waiting for the child with autism to initiate interaction by requesting a preferred toy, (b) asking the child to label the toy, (c) giving the child the toy when he has labeled it correctly, and (d) providing praise for the correct answer. The amount of reciprocal social interactions demonstrated in each dyad was used as an outcome measure. For the purpose of this particular study, a reciprocal social interaction was defined as any initiation of an interaction

from the target child to the peer tutor (or vice versa), that was followed by an appropriate response. Results showed an increase in the initiations and responses in both the children with autism and their typically developing peer tutors.

Peer tutoring has also shown effective results with elementary school students. Pierce and Schreibman (1995) implemented a peer tutor program using pivotal response training (PRT) for ten year-old children with autism. Each SWA was paired with a typical peer who had been trained in specific PRT strategies. The peer prompted, modeled, and reinforced social behaviors such as conversation, joint attention, and responding to cues. The investigators recorded the number of times the target children initiated conversation with a peer, the length of time that they maintained their interaction, the amount of specific attentional behaviors demonstrated, and the level of engagement they showed in each activity. Post-intervention data revealed an increase in the frequency of SWA's social interactions, as well as an increase in the duration of their interactions with peers. Joint attention behaviors of SWA also improved.

Peer tutoring strategies do not always require a SWA to be individually paired with a peer, Goldstein, Kaczmarek, Pennington, and Shafer (1992) used a peer-tutoring intervention using triads (2 typical peers assigned to one SWA) to increase preschool student's social interaction skills. The typical peers were trained to facilitate social interaction with the SWA during a five-minute play activity. Specifically, the peers were instructed to establish mutual attention between themselves and SWA and to acknowledge and comment on the behaviors of SWA. The verbal and nonverbal communicative behaviors were recorded for the entire triad using a combination of audio recordings and direct observation. Coded verbal behaviors included: requests for information, imitative responses, and unintelligible utterances, while nonverbal behaviors included gesturing, pointing, and head nods. Results showed that four out of

the five target children showed improvements in social interaction as a result of the peer intervention.

*Classwide peer tutoring.* A variation of the peer tutor approach is a strategy called classwide peer tutoring (CWPT). CWPT programs involve all students in a class working together in tutor-learner pairs or small groups on a variety of academic tasks and/or social skills (Kamps, Barbetta, Leonard, & Delquadri, 1994). Cooperative learning groups are one type of CWPT, and such groups usually involve students working together to reach a cooperative goal, such as group worksheets or projects (Dugan et al., 1995). Similar to peer tutoring approaches, CWPT and cooperative learning groups allow multiple opportunities for social interactions between SWA and typical peers, and they help to improve academic and behavioral goals of all group members.

Kamps et al. (1994) studied the effects of CWPT on three elementary school students with high-functioning autism. The authors measured the intervention's impact on students' reading skills and social interaction during free-play. CWPT followed a short period of teacher directed reading instruction, and each group was required to read passages aloud, receive feedback and correction from peers, and answer comprehension questions with peers. Results showed that CWPT intervention was successful in improving reading fluency and comprehension skills of all students, as well as increasing social interactions between the SWA and their typical peers.

Dugan et al. (1995) investigated the effects of using cooperative learning groups as an instructional strategy for the inclusion of two students in a fourth-grade classroom; one child was diagnosed with autism, and the other had a moderate intellectual disability. Cooperative learning groups consisted of four students: one peer who was identified as an academically high-

functioning, two peers functioning at a moderate level, and one low functioning peer. The intervention program consisted of a 10-minute lecture from the teacher, followed by approximately 30 minutes of cooperative learning. Within each group, peers tutored one another on facts from the lesson, and then worked together to complete a group activity. Each child within the group was assigned a specific job or role, and teachers rewarded appropriate social skills for all group members. Outcome measures demonstrated that the cooperative learning program benefited both the target students and their typical peers; weekly pre- and post-test score improved, academic engagement increased across groups, and social interactions between peers grew longer.

*Peer networks.* Another peer-mediated intervention strategy is the peer network approach, in which a group of typical peers agree to work together to provide continuous social support for a disabled student. Haring and Breen (1992) validated this approach with middle school students. In their study, two peer networks were created to support the social integration of two SWA. Therefore, each SWA had his own social network; the ratio of typical peers being 4:1 and 5:1 respectively across the two networks. The goal of the networks was to increase social interaction and friendship development among SWA and their typical peers. The SWA were approached by typical peers during lunch periods and transitions between classes. Each peer was assigned to interact with the target student during these times at least once per day, and encouraged to interact with SWA in any additional, naturally-occurring opportunities (e.g., sitting together at lunch). Peers, the target student, and an adult mediator met on a weekly basis to discuss the week's interactions, monitor their progress as a group, create strategies to reach intervention goals, and practice or reinforce specific social skills. Results showed that social interactions increased among the members of each peer network both inside and outside of

school. In addition, parents and teachers reported improvements in non-targeted contexts such as increased interaction in after-school activities and on weekends. These results demonstrated that peer networks can support social interaction in natural contexts without the use of adult prompts.

*Peer Buddies.* The “Peer Buddy” program is an intervention developed at Vanderbilt University (Hughes et al., 1999) that is specifically designed to promote inclusion of special education students at the high school level. Hughes et al. (1999) identifies the “core” of the Peer Buddies program as an elective course in which typical students learn about a variety of learning problems and disabilities, review instructional techniques used in special education, and brainstorm ideas how to foster inclusion of students with disabilities. In addition to providing fundamental information, the course requires students to learn techniques through observation of their partner in his self-contained classroom. Observing the special education teacher is meant to teach Peer Buddies effective instructional techniques, such as verbal and physical prompts, and demonstrate reinforcement schedules. Once the Peer Buddy is assigned a partner, they are required to facilitate the inclusion of the student in a variety of mainstream settings, such as the general education classroom, the school cafeteria, and after-school activities. Peer Buddies are also expected to assist their partners with academic tasks such as class projects, and help them improve their communication skills with both teachers and peers. Peer Buddies are monitored by a grading system which outlines expectations of their role, and encourages them to monitor their own progress in a daily journal.

Hughes et al. (1999) reports that the Peer Buddies program is highly effective in promoting special education students involvement in a wide range of high school activities, both social and academic. At McGavock High School, the first high school to implement the program, special education students began to take part in student council, participate in after-school sports,

and attend events in the community. The efficacy of the Peer Buddy program in younger populations has not been investigated; however, it includes aspects of peer-mediated interventions that have empirical support for younger groups. For example, Peer Buddies shares similarities with peer tutoring approaches, as students are paired with a special education student and provide assistance on academics tasks. Similarities also exist between Peer Buddies and the peer network approach; students are encouraged to develop friendships with their partner and facilitate social interactions outside of the classroom.

An important consideration when reviewing the aforementioned interventions is that their implementation and efficacy is dependent in large part on the motivations and actions of typical peers. Several peer-mediated interventions are voluntary; therefore, in order for implementation to occur, peers need to be willing to interact with SWA. Social and behavioral theory has often linked a person's attitude to their behavioral intentions, such as in the Theory of Planned Behavior (e.g., Ajzen, 2001). In fact, attitudes have been directly associated with students' willingness to participate in voluntary peer-mediated intervention programs; the more positive a student's attitude was, the more willing the student was to volunteer (Carter, Hughes, Copeland, & Breen, 2001). Thus, peer attitudes towards SWA can be seen as a critical component to their successful inclusion. Negative peer attitudes will significantly impact their willingness to interact with SWA and may preclude successful integration of students with disabilities into inclusive educational settings.

#### *Peer attitudes towards SWA*

Despite the increase in inclusive education for SWA, and the subsequent emphasis placed on peer-based interventions, research has demonstrated that peers report negative attitudes toward unfamiliar SWA (Campbell, 2005; Campbell, Ferguson, Herzinger, Jackson, & Marino,

2004; Swaim & Morgan, 2001). It is well documented within the research literature that typical children report less favorable attitudes towards peers with disabilities when compared to non-disabled peers (Bak & Siperstein, 1987; Friedrich, Morgan, & Devine, 1996; Harper, 1999; Maras & Brown, 2000; Nowicki, 2006). Although there are only a few research studies that address peers' attitudes towards autism specifically, some findings in the literature may have implications for SWA. For example, evidence suggests that children tend to show more favorable attitudes toward physical impairments than towards intellectual disability (Gottlieb & Gottlieb, 1977; Nowicki, 2006). Given that SWAs do not typically demonstrate visible physical impairments, but often have communication problems and cognitive delays, they may be more at risk of negative biases from peers. Further, social rejection is considered more likely when the included child has a disability that affects social problem-solving and emotional regulation (Odom et al., 2006). Therefore, the social deficits that characterize SWA may place them at an even greater disadvantage with typical peers when compared to children with disabilities that do not affect social functioning per se (i.e., a student with a physical disability). Given the potential impact of negative peer attitudes towards inclusion, research has examined ways to ameliorate negative attitudes. Prior to discussing interventions for attitude change, it is important to clarify the theoretical definitions of attitudes used within research literature.

Attitudes are often conceptualized as consisting of three components or dimensions: affective, cognitive, and behavioral (Ajzen, 2001; Nowicki, 2006; Rosenbaum, Armstrong, & King, 1986a; Triandis, 1971). In regard to attitudes towards children with disabilities, the affective component involves the feelings or emotions the subject elicits, such as, "[target child] makes me angry," or "I feel sorry for [target child]." The cognitive component is defined as the personal beliefs an individual holds about the child with a disability, such as "I think that she is

dumb,” or “I think he is ugly.” The behavioral or “conative” (Gottlieb & Gottlieb, 1977; Swaim & Morgan, 2001) component involves statements of behavioral intentions towards the child with a disability such as “I would ask [target child] to join my group of friends,” or “I would work on math problems in class with [target child]” (Morgan, Walker, Bieberich, & Bell, 1996). It is important to highlight the multidimensionality of the attitude construct because the number of components used to define attitude varies across different research studies; some studies measure attitudes in terms of only one or two of the components, whereas others use all three.

The affective, behavioral, and cognitive components also help to elucidate mechanisms of attitude change. Triandis’ (1971) theory of attitude formation and change postulates that change can occur at any of the three components. For example, presenting new information about an individual may cause a direct change to the cognitive component, leading the person to modify previously held beliefs. The affective component can be changed experientially, meaning, a pleasant or an unpleasant experience with an individual with a disability can affect the emotions associated with that particular disability. Lastly, the behavioral component may be changed by forcing a person to behave in a way that is inconsistent with his attitudes (e.g., working cooperatively with a disabled peer). Triandis posits that change at any of the three components is likely to impact the remaining two. Therefore, interventions may differ in terms of the specific dimension of attitude that they target; however, all interventions share the same objective of promoting comprehensive attitude change.

#### *Interventions for peer attitude change*

Various interventions have been developed to encourage attitude change towards persons with disabilities. Examples of interventions used across child and adult populations include: providing information about the disability, direct contact with individuals who are disabled,



vicarious experience or simulation of the disability, systematic desensitization, positive reinforcement, or combinations of these approaches (Shaver, Curtis, Jesunathadas, & Strong, 1989). Several attitude change interventions have been examined in child and adolescent populations specifically, such as video-based educational interventions (Holtz & Tessman, 2007), structured contact with students with disability (Maras & Brown, 1996), providing descriptive and explanatory information about a target child (Campbell et al., 2004), among others. Attitude change approaches can be classified as either “educational” or “experiential” in nature (Campbell, 2006). For the purposes of this review, empirical findings will be organized according to these two categories.

*Experiential approaches.* Simulation of disability is one example of an experiential approach used to produce attitude change. Disability simulation creates situations in which non-disabled people can experience what it is like to live with a disability. An example of a disability simulation would be having a person wear a blindfold and perform an everyday task to simulate visual impairment, or have an individual navigate through a public place while using wheelchair to simulate physical disability (Crotty, Finucane, & Ahern, 2000). The premise behind simulation strategies is that through experiencing a disability people will gain more understanding and empathy for those who live with disabilities. Despite its use as an attitude change intervention, the efficacy of simulation strategies has not been firmly established (Flower, Burns, & Bottsford-Miller, 2007). In a comprehensive review of disability simulation studies, Flower et al. (2007) found only small effect sizes across the reviewed literature. Only 10 of the 41 selected studies met the criteria for their meta-analysis, and the majority of studies were conducted with adults. Therefore, the authors suggested that more research is needed in order to make sound conclusions about the efficacy of simulation strategies in changing children’s

attitudes towards disability. Furthermore, most of the studies involved simulation of blindness or physical disability, and no studies attempted to simulate ASDs. Given the complex nature of ASD symptoms, it is understandable why simulation is not used. Cognitive impairments, social deficits, and restrictive interests would be difficult, if not impossible, to simulate for peers.

A more commonly used experiential approach for improving attitudes towards SWA is increasing contact with typical peers. Creating a context in which typical peers have contact with children with disabilities has been shown to influence peer attitudes (Maras & Brown, 1996; Rosenbaum, 1986b). This experiential approach is grounded in Allport's (1954) intergroup contact theory, which purports that contact with a minority group can reduce prejudices of the majority. Allport presents specific conditions that need to be satisfied in order for attitude change to occur: both groups must share equal status within their shared context, both groups need to work cooperatively towards the same goals, and the contact must be "sanctioned" or supported by the institution in which it takes place. Research supports the efficacy of contact theory in reducing prejudice (Pettigrew & Tropp, 2006); however, there is some debate whether all conditions of Allport's theory need to be satisfied, such as whether or not the contact has to be direct, in order for it to be successful (Cameron & Rutland, 2006). Nonetheless, contact theory has received empirical support for modifying typical peers' attitudes towards integrated students with disabilities (Maras & Brown, 1996; Slininger, Sherrill, & Jankowski, 2000; Tripp, French, & Sherrill, 1995).

Maras and Brown (1996) found evidence to support the efficacy of contact in the improvement of elementary school students' attitudes towards children with severe learning disabilities (SLD). The integration program involved structured sessions in which typical students were paired or grouped with children with SLD. Results showed that the typical

children who participated in the integration program showed more positive changes in attitude than control students. Tripp et al. (1995) found that students who participated in an integrated physical education program showed more positive attitudes towards peers with behaviors disorders when compared to students in a segregated setting. Further, Slininger et al. (2000) found that contact had a positive effect on both the cognitive and behavioral attitudes of males towards a peer with a physical and intellectual handicap.

*Educational approaches.* Another approach to changing attitudes towards disability is through educational intervention. The rationale behind educational interventions is that through presenting information about a disability, the audience's knowledge will increase and mitigate any previously-held inaccurate beliefs and/or negative stereotypes. For example, dispelling myths about psychiatric disorders, such as schizophrenia, through the provision of accurate information has been shown to change adults' attitudes towards the disorders (Corrigan et al., 2001). Educational interventions have also been shown to produce positive changes in high school students towards people with mental illness (Pinfold et al., 2003).

A recent example of an educational intervention designed to modify peer attitudes towards disability is Holtz and Tessman's (2007) study evaluating an educational video about Tourette Syndrome (TS). According to the authors, the purpose of the intervention was to modify peers' beliefs and improve attitudes towards children with TS by increasing their knowledge of the disorder. The video provided a definition of TS as well as a description of associated symptoms (i.e., multiple types of tics). Elementary school students completed measures of their knowledge of TS, their attitudes towards disabilities, and their behavioral intentions towards a target child with TS, both pre- and post-intervention. Students shown the educational video had

greater changes than controls across all three dependent measures; their knowledge, positive attitudes, and behavioral intentions improved after the presentation of the educational video.

Educational interventions have also shown positive effects in reducing negative peer attitudes towards children with intellectual disabilities. Bak and Siperstein (1987) and Siperstein and Chatillon (1982) found that presenting information improved elementary school students' attitudes toward an unfamiliar child with mental retardation. Bak and Siperstein demonstrated a positive change in children's attitudes towards "mildly and moderately retarded" peers as a result of receiving information about the peer's personal interests and preferred activities. Further, when children viewed the target peer as sharing similar preferences towards an object, such as a television show or a certain food, the peer was viewed more favorably regardless of whether they had an intellectual disability or not.

Given the promising results of educational intervention and peers' attitudes towards mental illness, TS, and intellectual disability, it would seem likely that similar effects would be evidenced in SWA interventions. Educational interventions for autism have been created and marketed to educate typical peers about autism and promote positive social interactions toward SWA (e.g., *Autism Vision: Creating Classroom Connections*; Danya International, 2003). Though only a few studies have investigated the efficacy of such interventions for ASDs, and the research that is available has shown disparate results (Campbell et al., 2004; Swaim & Morgan, 2001).

#### *Educational interventions for autism*

Prior to discussing relevant empirical findings, it is essential to describe the informational messages that are often used in educational interventions for ASDs. Two specific types of information, explanatory and descriptive messages, have been studied in educational

interventions regarding SWA (Swaim & Morgan, 2001; Campbell et al., 2004). Explanatory information provides diagnostic and educational information about the disorder, such as name of the disorder, etiology, and associated symptoms. Descriptive information differs from explanatory in that it omits information about the disorder, and highlights similarities between typical peers and the target student (Campbell et al., 2004; Nabors & Larson, 2002). Both types of messages are grounded in social cognitive theory, and have been investigated in regards to attitude modification of children.

*Explanatory information.* The use of explanatory information to modify attitudes and change behavior is influenced by social attribution theory. Put simply, social attribution theory is a model of motivation based on humans' tendency to create interpretations of others' behavior, such as, "Why is the new student talking to himself?" (e.g., Corrigan, 2000; Weiner, 1992, 1993). Attribution theory asserts that we make judgments about responsibility when analyzing the behaviors of others. Our perception of another person's control over his own behavior, or his *responsibility* for that behavior, has the power to influence our own emotions and actions. Perceived responsibility may evoke either positive (i.e., sympathy) or negative (i.e., anger) emotions towards the person, which will subsequently influence our social behavior (i.e. willingness to help versus social rejection; Weiner, 1980, 1992, 1993).

Attribution theory has been used as a model of help-giving behavior among peers. Weiner (1980) found that students were more motivated to help peers' academically (e.g., share class notes) if they attributed the peer's struggles to an uncontrollable cause (e.g., they have a learning disability that inhibits note-taking) rather than a controllable one (e.g., they slept through class rather than taking notes). Therefore, attribution theory creates a framework linking

a person's causal beliefs about a specific event, to their emotional reactions to that event, and then to their subsequent behavior.

Social attribution theory has been empirically validated with children. For example, Juvonen (1992) conducted a study in which sixth-grade students were asked to read vignettes representing problem behaviors and complete ratings of perceived responsibility, affective reactions, and social consequences (i.e., social support and rejection). Results showed that the greater perceived responsibility for the child's behavior, the less sympathy and the more anger was directed towards the hypothetical child. Students' affective responses were also correlated with their social intentions; the more anger reported by students, the less willing they were to offer social support. Goosens, Bokhorst, Bruinsma, and Boxtel (2002) found similar results in a younger age group. First- and second-graders reported that hypothetical aggressive children, in comparison to hypothetical withdrawn children, were more responsible for their behavior, and elicited more feelings of anger than sympathy. The social responses of the students were also consistent with attribution theory; students were more willing to "be friends with" a child described as anxious and withdrawn than a child described as bossy and aggressive.

Given that attribution theory applies to children, provision of explanatory information can be viewed as a mechanism of attitude change. The hypothesis is that provision of explanatory information, which explains the child's behavior as a disorder with specific symptoms, will lead naïve peers to attribute a low responsibility to the child. The less responsibility assigned to the child with the disability, the more positive their affective reactions and social responses will become. Campbell (2006) found that explanatory information was the most frequently studied message across various disorders, however, empirical support has been inconsistent. The impact of explanatory messages on peer attitudes has been found to be negative or non-significant across

a variety of childhood conditions (e.g., Bell & Morgan, 2000; Friedrich et al., 1996; Nabors & Larson, 2002; Sigelman, 1991).

*Descriptive information.* The use of descriptive information in educational interventions is grounded in cognitive consistency theory (Heider, 1958). Heider postulated that people are motivated to experience consistent cognitions or attitudes, and perceived similarity with another is a positive experience that increases likeability. Therefore, according to cognitive consistency theory, the more similar the typical peer perceives himself to be to a peer with a disability, the more positive his attitudes will be towards that peer. Cognitive consistency theory also suggests that shared interests between two people can increase their positive attitudes towards each other. For example, a peer's attraction toward an unfamiliar student with autism may increase if the peer learns that they both like to play the same sports or watch the same television shows. Cognitive consistency theory has been empirically supported in aforementioned studies of children's attitudes towards peers with intellectual disabilities (Bak & Siperstein 1987; Siperstein & Chatillon; 1982).

*Explanatory vs. Descriptive information and SWA.* Swaim and Morgan (2001) examined the impact of an educational intervention on third- and sixth-graders' cognitive attitudes and behavioral intentions towards a hypothetical child with autism. Results demonstrated that typical peers held more negative attitudes when presented with a video of a child displaying autistic symptoms, such as gaze aversion and echolalia, than a "normal" child (i.e., without symptoms). The intervention provided either a descriptive message or a combined message of descriptive and explanatory information. Post-intervention measures revealed that both information conditions failed to have an impact on the students' attitudes towards the boy with autism; students' attitudes remained negative despite the intervention.

Campbell et al. (2004) contested these results in a similar study using a significantly larger sample and a slightly altered experimental design. Consistent with Swaim and Morgan's findings, Campbell found that elementary school students reported more negative attitudes towards an unfamiliar SWA than a typical child. In addition to negative cognitive attitudes, results showed that students had less positive behavioral intentions towards the child showing autistic behaviors. Contradictory to Swaim and Morgan's study, however, Campbell et al.'s outcome measures demonstrated the benefit of presenting information to typical peers. Compared to descriptive information alone, provision of a combination of descriptive and explanatory information improved the behavioral intentions of all participants who received it regardless of their age and gender. There were some age and gender effects evidenced in the results. For example, the cognitive attitudes of the third and fourth graders improved after receiving both the descriptive and explanatory messages, but the same effect was not seen in fifth-grade students. The addition of explanatory information increased girls' academic behavioral intentions (e.g., "work on a project at school with [target child]"), but did not have an equivalent effect on boys.

In order to reconcile incongruent results and elucidate additional factors that may impact educational intervention, Campbell (2006) recently conceptualized education about SWA as an application of social persuasion theory. Campbell reviewed educational interventions for autism according to the following components: message, source, medium, and audience. When literature regarding interventions for autism was unavailable, studies of peer attitudes towards children with physical and medical disabilities were reviewed. Campbell made several conclusions in his review that stimulate future research questions. He found that the most widely researched persuasion variables in the literature are message and audience; several studies have investigated



the impact of explanatory information about disabilities on typical peers, and examined age and gender differences in attitude change. Therefore, Campbell's review explicitly highlights a deficiency in research regarding additional persuasion variables, such as source and channel. Understanding the effect of source on educational interventions for SWA is especially relevant given that teachers, parents, and other professionals are often called upon to intervene for these students.

### *Effect of source in persuasive communication*

Research has shown that characteristics of the communicator, or *source*, of the message can impact the persuasiveness of the information (Eagly & Chaiken, 1984; Franzoi, 2003; Pornpitakpan, 2004). Pornpitakpan (2004) conducted a comprehensive literature review of source effects on persuasion by summarizing findings from five decades of research. The main effects of source *credibility* were investigated across the literature, as well as the source's interaction with the following variables: message, channel, receiver, and destination. Overall, the research showed that sources that are both well-liked and considered credible by the audience are more successful in producing attitude change. The perceived credibility of a source is said to be determined by the receiver's impressions of two characteristics, trustworthiness and expertise (Pornpitakpan). These two characteristics are purported to impact credibility to different degrees, with trustworthiness considered more influential than expertise. Further, the review suggests that highly credible sources are more persuasive with naïve audiences than low credibility sources. Therefore, the conclusion can be made that a naïve and trusting receiver is more likely to be influenced by the message due to increased perceived credibility.

Additional source characteristics have also been suggested to impact the persuasiveness of a message, such as similarity, physical appearance/attractiveness, and power/authority.

Perceived similarity of a source by the receiver can increase their likeability; an assumption supported by the aforementioned social theory of cognitive consistency. Comparable effects have been found in regards to physical attractiveness. For example, Pallak (1983) found that attractiveness of source increased the amount of subjects' agreement to the source's message regardless of the strength of the argument presented. Power/authority of the source is especially important to consider when discussing educational interventions given the inherent power differential that exists between children and their parents, teachers, and other adults. Research regarding children's attitudes towards disability has revealed relationships between typical peers' attitudes and the attitudes of authority figures in their lives, such as their parents (Rosenbaum, Armstrong, & King, 1988) and teachers (Forlin & Cole, 1994). Although all of these characteristics have been associated with the persuasiveness of the source; however, it remains unclear whether each characteristic impacts the receiver's impression differentially, or if they represent multiple dimensions of a larger construct. For example, a highly persuasive source is likely to be rated as either credible, likeable, attractive, etc., or perhaps a sum total of several of these characteristics, by the receiver. Therefore, it may be that *persuasiveness* of the source is a hypothetical construct that influences the receiver, and subsumed within this construct are perceptions of credibility, likeability, similarity, attractiveness, and power/authority.

*Receiver characteristics.* In addition to source effects, receiver characteristics have also been implicated as important variables in the outcome of educational interventions. Several studies have documented effects of such receiver characteristics, and trends have emerged across these studies. For example, it has been evidenced that girls generally report more positive attitudes towards disabilities than boys (Nabors & Larson, 2002; Nowicki, 2006; Bak & Siperstein, 1987; Rosenbaum et al., 1988), and younger children tend to have more positive

attitudes towards disabilities than older children (Nabors & Larson; Rosenbaum et al.). In addition to age and gender, prior knowledge about a disability has also been suggested to influence attitudes. Campbell (2007) found an interaction between the students' prior knowledge of autism and message; naïve students responded less favorably to descriptive information than their non-naïve peers. Further, Nabors & Lehmkuhl (2005) found that prior knowledge about cerebral palsy was related to more positive perceptions of children with the disability.

The most frequently studied receiver characteristics in literature regarding autism, medical conditions, and physical disabilities are sex and age/grade (Campbell, 2006). In regards to SWA, available evidence suggests that negative attitudes increase with age, and younger children are more responsive to explanatory information than older children (Campbell et al. 2004). According to Campbell's (2006) review, the relationship between children's prior knowledge about autism and their cognitive beliefs warrants further investigation.

*Source effects on peer attitudes towards SWA.* Morton and Campbell (2007) investigated the impact of multiple information sources on elementary school students' initial attitudes towards autism, as well as interactions between source and receiver characteristics. In the study, elementary school children received information from one of the following sources: (a) a videotaped adult voice-over, (b) their teacher, (c) a hypothetical mother (i.e., enacted by a graduate student), (d) a hypothetical father (i.e., the principal investigator), or (e) an outside professional (i.e., a "doctor" enacted by the same graduate student portraying the mother). The researchers hypothesized that the teacher as a source would have the most impact on the students, based on the presumption that students generally perceive their teachers to be a credible, likeable, and authoritative source of information. Results showed that students did in fact report different attitudes toward an unfamiliar child with autism depending on which source

delivered the information, and interactive effects of source and receiver characteristics (i.e., sex and grade) were also found. Fifth graders reported less favorable attitudes when information was presented by a parent versus their teacher or the doctor. Videotape as source showed more of an impact on the girls' cognitive attitudes than the boys', and older students responded more favorably towards the teacher's information than the younger children.

The purpose of the present study is to add to the research literature regarding educational interventions for peer attitudes towards SWA. Specifically, the effects of information source on the attitudes of middle school students towards a peer with autism will be investigated. Following similar procedures with an older sample of students, this study will serve as an extension of Morton and Campbell's findings of source effects in elementary school students. Receiver characteristics, such as sex and grade/age, as well as the students' perceptions of the communicator (i.e. ratings of expertise, trustworthiness, etc.) will be investigated as possible mediators of source effects.

The knowledge gained from this research will help to develop efficacious procedures for integrating SWA into mainstream classrooms. Specifically, the results will explicate the most effective strategies for introducing a student with autism to typical middle-school peers. The impact of source within the educational intervention is especially important to investigate given the wide variety of potential sources (e.g. teachers, parents, doctors, etc.) that may administer the intervention. The essential goal of this research is to understand the mechanisms of successful educational intervention about SWA at the middle school level, and help promote positive attitudes and social interaction between SWA and typical peers.

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CHAPTER 3

THE IMPACT OF INFORMATION SOURCE ON MIDDLE SCHOOL STUDENTS'  
ATTITUDES TOWARDS PEERS WITH AUTISM

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<sup>2</sup> Cavanagh, S.E. & Campbell, J. M. (2008). The impact of information source on middle school students attitudes towards peers with autism. To be submitted to *Research in Developmental Disabilities*.

## ABSTRACT

This study examined the effect of information source on typical peers' cognitive and behavioral attitudes towards an unfamiliar student with autism. Middle-school students ( $N=773$ ;  $M$  age = 12.9 years,  $SD = 0.9$  yrs.) viewed a 63-second videotape of a 14-year-old male actor, "Robby," portraying a child who either shows symptoms of autism (AUT) or not (NO-AUT). Students were randomly assigned to receive one of five informational messages about Robby: (a) No Autism (control condition;  $n=143$ ), (b) No information (NOINFO;  $n=148$ ), (c) Descriptive information only (DINFO;  $n=146$ ), (d) Explanatory information only (EINFO;  $n=166$ ), or (e) a combination of descriptive and explanatory information (D+EINFO;  $n=170$ ). The students received these messages from one of four sources: (a) videotape, (b) their teacher, (c) hypothetical mother and (d) a hypothetical doctor. Measures of cognitive attitudes, behavioral intentions, and source credibility were used as dependent variables. The potential mediating effect of source credibility was also examined. Results did not reveal a main effect for Source; however, interactive effects were found between Source and Sex, and Source and Message. Girls responded more favorably to "mother" than boys on a measure of cognitive attitudes. Doctor had more of an impact on behavioral intentions when delivering D+EINFO versus EINFO. Regression analyses suggested that the "likeability" of the source mediated the relationship between source and cognitive attitudes. Social persuasion theory proves to be a useful framework for evaluating the impact of educational interventions. Study limitations, clinical implications, and suggestions for future research are discussed.

INDEX WORDS: autism, peer attitudes, persuasion theory, information source

### *Introduction*

Autism is a neurodevelopmental disorder characterized by three core impairments: abnormal social interaction, deficits in language and communication skills, and restrictive and repetitive interests and/or behaviors. Children diagnosed with autism show abnormal development in at least one of these three areas at a very young age (American Psychiatric Association, [APA] 2000). Within the realm of social impairments, children with autism may appear oblivious to the presence of others, and often show little or no desire to establish friendships. Communication is characterized by language impairments and/or idiosyncratic use of language (e.g., echolalic speech), and social interaction is further complicated by the inability to understand or execute nonverbal behaviors (e.g., eye contact, hand gestures.). The level of impairment or severity of the disorder varies as a function of individual factors such as cognitive ability and developmental level (APA, 2000). Differential diagnoses have resulted in the identification and classification of a range or ‘spectrum’ of disorders that share core autistic impairments. Autism Spectrum Disorders (ASDs) include Autism, Asperger’s Disorder, and Pervasive Developmental Disorder—Not Otherwise Specified.

ASDs have increased in prevalence over the last twenty years with recent epidemiological studies estimating the occurrence of autism to be 10 times higher than it was in the 1980s and early 1990s (Yeargin-Allsopp et al., 2003). Current statistics estimate that approximately 1 out of every 150 children is diagnosed with an ASD, therefore, more of today’s students are entering our school systems with these diagnoses than in the past. Educational legislation, such as the Individuals with Disabilities Education Act (IDEA; 1997) and the Individuals with Disabilities Education Improvement Act of 2004 (IDEIA; 2004), mandates that appropriate public education for students with disabilities take place in the most integrative



environments possible (P.L. 105-17, 1997; P.L. 108-446, 2004). Such legislation has resulted in an increased effort to grant special education students access to general education classrooms. Given the increase in students with autism (SWA), and current special education regulations and legislation, it can be determined that SWA are being included within general education classrooms more frequently than in the past.

Research has shown that physical placement alone is not sufficient to successfully integrate SWA (Myles, Simpson, Ormsbee, & Erickson, 1993), and empirical support for positive social and academic outcomes of inclusion for SWA is both inconsistent and insufficient (Harrower & Dunlap, 2001; Mesibov & Shea, 1996). The growing literature regarding inclusion and SWA consistently calls for thoughtful and individualized programming rather than passive placement into a mainstream classroom (Harrower & Dunlap). Due to the pervasive social and communication problems exhibited by SWA, involving typical peers in intervention efforts is particularly warranted for successful inclusion.

Peer-based interventions have been widely implemented for children with SWA (Harrower & Dunlap; McConnell, 2002; Rogers, 2000). The foci of peer-mediated interventions are to train typical peers to (a) initiate social and/or academic interactions with SWA and (b) reinforce appropriate responses to their initiations. Some of the interventions that have garnered empirical support for SWA include peer tutors/buddies, class-wide peer tutoring, and peer networks. However, the efficacy of peer-mediated intervention is dependent on the motivations and actions of the typical peer. Several peer-mediated interventions are voluntary; therefore, in order to increase their use more peers need to be willing to interact with SWA. Social and behavioral theory links a person's attitude to their behavioral intentions and provides a useful framework to understand linkages between peers' attitudes and behavior (Ajzen, 2001). In fact,

attitudes have been directly associated with students' willingness to participate in voluntary peer-mediated intervention programs; the more positive a student's attitude was, the more willing the student was to volunteer (Carter, Hughes, Copeland, & Breen, 2001). Thus, peer attitudes towards SWA can be seen as a critical component to their successful inclusion.

Despite the increase in inclusive education for SWA, and the subsequent emphasis placed on peer-based interventions, research has demonstrated that peers report negative attitudes toward unfamiliar SWA (Campbell, 2005; Campbell, Ferguson, Herzinger, Jackson, & Marino, 2004; Swaim & Morgan, 2001). Furthermore, it is well documented within the research literature that typical children tend to report less favorable attitudes towards peers with disabilities when compared to non-disabled peers (Bak & Siperstein, 1987; Friedrich, Morgan, & Devine, 1996; Harper, 1999; Maras & Brown, 2000; Nowicki, 2006). Therefore, several techniques have been created to modify children's and adolescents' attitudes towards people with disabilities, such as, video-based educational interventions (Holtz & Tessman, 2007), and structured contact with students with disability (Maras & Brown, 1996). Educational intervention is one strategy that has shown positive effects in reducing negative peer attitudes towards children with Tourette Syndrome (Holtz & Tessman) and intellectual disabilities (Bak & Siperstein; Siperstein & Chatillon, 1982). The premise behind educational interventions is that providing information about a disability will increase the audience's knowledge, and ameliorate any previously-held inaccurate beliefs and/or negative stereotypes. Educational interventions for autism have been designed and marketed to educate typical peers about autism and promote positive social interactions toward SWA (e.g., *Autism Vision: Creating Classroom Connections*); however, empirical investigations of the impact of such interventions are lacking, and available research shows disparate results (Campbell et al., 2004; Swaim & Morgan).

Campbell (2006) recently presented a conceptualization of peer education about SWA as an application of social persuasion theory. Campbell reviewed educational interventions for autism according to the following components: message, source, medium, and audience. According to his review, the most widely researched persuasion variables in the literature have been message and audience; several studies investigated the impact of explanatory information about disabilities on typical peers, and examined age and gender differences in attitude change. Therefore, Campbell explicitly highlights the need for research regarding additional persuasion variables, such as source and channel. Understanding the effect of source on the educational intervention is especially important with ASD populations, given that teachers, parents, and other professionals are often called upon to intervene on behalf of a SWA.

Research has shown that characteristics of the communicator, or *source*, of the message can impact the persuasiveness of the information (Franzoi, 2003; Pornpitakpan, 2004). The literature suggests that the perceived credibility of a source is determined by the receiver's impressions of two characteristics, trustworthiness and expertise (Pornpitakpan). Additional source characteristics have also been suggested to impact the persuasiveness of the message, such as similarity, likeability, physical appearance/attractiveness, and power/authority. It is still unclear from the research whether these characteristics impact the receiver's impression of the source differentially, or if they represent multiple dimensions of a larger construct.

Morton and Campbell (2007) investigated the impact of multiple information sources on elementary school students' initial attitudes towards autism. Children received information from one of the following sources: (a) a videotaped adult voice-over, (b) their teacher, (c) a hypothetical mother (i.e., enacted by a graduate student), (d) a hypothetical father (i.e., the principal investigator), or (e) an outside professional (i.e., a "doctor" enacted by the same

graduate student portraying the mother). Results showed that students reported different attitudes toward an unfamiliar child with autism depending on which source delivered the information. Interactive effects of source and receiver characteristics (i.e., sex and grade) were also found. Children's perceptions of source persuasiveness were not measured in the investigation, however.

The purpose of the present study is to add to the research literature regarding educational interventions for peer attitudes towards SWA. Specifically, the effects of information source on the attitudes of middle school students towards a peer with autism were investigated. Receiver characteristics, such as sex and perceptions of source, were investigated as possible mediators and moderators of source and message effects. The following research questions and hypotheses are posed:

- (a) Does the source of information in an educational intervention have an effect on typical middle school students' cognitive attitudes and behavioral intentions toward a child portraying symptoms of autism? I predict that the source will produce a main effect, and videotape will be the least effective source of information.
- (b) Are there interactive effects of source and receiver characteristics (i.e., sex and grade)? Fifth grade students have been shown to respond more favorably to extra-familial sources of information (Morton & Campbell); therefore, I predict that this pattern will continue in the middle school sample, with students responding less favorably to the explanatory message when the "mother" is the source, rather than their teacher or a "doctor." In terms of sex, previous research on attitude modification leads to the prediction that females will show more favorable attitudes than their male peers, regardless of which source communicates the message.

- (c) Is there a significant interaction between source of information and the type of message that is communicated? For example, do explanatory messages produce a greater effect when presented by doctor rather than a mother? Likewise, is descriptive information more effective when it is delivered by the mother rather than a teacher or a doctor? In Morton and Campbell's study, the message delivered by the source was held constant. This study will attempt to investigate the interaction that potentially exists between the source and the components of the message. I predict that an interaction will be found between source and message; specifically, the doctor will be more effective when delivering a message containing explanatory information when compared to other message conditions, and the mother will be more effective when delivering descriptive information when compared to other message conditions.
- (d) Is there a relationship between the ratings of the source's persuasiveness and students' cognitive attitudes and behavioral intentions? In other words, do perceptions of a source's credibility, likeability, and similarity mediate the impact of source on students' attitudes? Further, is sex a possible moderator of this effect? I predict that the students' perceptions of the source will be a mediator to the source's impact on both cognitive attitudes and behavioral intentions, and that this effect will be moderated by the sex of the student.

### *Methods*

*Participants.* Participants were 773 middle school students (326 boys, 42.3 %; 444 girls, 57.7%; age  $M = 12.9$  years,  $SD = 0.9$  yrs.) from three public middle schools in Georgia.

Participants were recruited from 84 homeroom classrooms through a letter and parental informed consent form sent home from school with each student. Students also provided written informed

consent prior to data collection. Procedures were approved by the institutional review boards of both the collaborating school districts and the University of Georgia. Relevant information about the three participating schools according to state records for the 2004-2005 school year is presented below:

<u>School</u>	<u>County</u>	<u>Location</u>	<u>Enrollment</u>	<u>% Eligible for Free/Reduced meals</u>	<u>% Students with disabilities</u>
Clarke Middle	Clarke	Athens, GA	631	65	21
Hilsman Middle	Clarke	Athens, GA	733	64	21
Shiloh Middle	Gwinnett	Snellville, GA	1,602	43	15

Participants' self-identified race/ethnicity was as follows: African American, 51%; Asian American, 3.5%; European American, 28.5%; Hispanic/Latino, 7.4%; and Other 9.6%. The racial/ethnic composition of the sample appeared to be generally representative of the larger school population when compared to school-based demographic information provided by the Georgia Department of Education (<http://www.reportcard2006.gaosa.org/k12/demographics.asp>) with some exceptions. State racial/ethnic percentages reported for the 2004–2005 school year were African American 38%, Asian American 3%, European American 49%, Hispanic/Latino 8%, and Multiracial 2%; the majority of the current sample was African American which is different than the state-wide demographics.

Prior to asking for students' written informed consent, the researchers explained that they were interested in "learning about how students make friends with students they don't know." The researchers further explained that if students decided to participate, they would be asked "what [they] think about a boy who might be coming to [their] school who had been videotaped." Participation rates across the 84 classrooms ranged from 4 % to 82% ( $M = 37.85$  %;

$SD = 20.71\%$ ) and did not differ across message conditions,  $F(4,83) = .384$ , *ns.* or source conditions,  $F(3,83) = 3.56$ , *ns.* The overall participation rate was 38.50% (i.e., 773 participants out of 2,008 eligible students).

*Design and Procedure.* After providing written informed consent, the students were asked to fill out three sections of the response booklet (Appendices A-F). The first section was a brief demographic survey in which students identified their race and gender. The second section consisted of a single question in yes/no format that asked the students whether they had ever “heard of autism.” Students who responded “yes” were then instructed to describe their understanding of autism in their own writing. The final section was a 10-item questionnaire comprised of statements about autism that the students marked as “true” or “false.” The questionnaire was created as a measure of the students’ current knowledge of autism (KOA; Campbell, 2005; Appendix A).

Students then viewed a 63-second videotape of a 14-year-old male actor, “Robby,” portraying a child who either shows symptoms of autism (AUT) or not (NO-AUT). The video used in the Autism condition shows Robby engaging in behaviors symptomatic of the disorder, such as hand flapping, body rocking, and echolalia. In the NO-AUT condition Robby displays no autistic behaviors and he interacts appropriately with a female adult. Participants were randomly assigned to receive one of five informational messages about Robby: (a) No Autism (control condition;  $n=143$ ), (b) No information (NOINFO;  $n=148$ ), (c) Descriptive information only (DINFO;  $n=146$ ), (d) Explanatory information only (EINFO;  $n=166$ ), or (e) a combination of descriptive and explanatory information (D+ EINFO;  $n=170$ ). DINFO highlighted similarities between Robby and his potential peers; he was described as a boy with similar characteristics and interests to the students. EINFO explained that Robby had a diagnosis of autism and describe

some of the behaviors that students with autism exhibit. D+ EINFO conditions presented both the DINFO and the EINFO messages to the students. NOINFO groups were not provided with any information about Robby's condition or his social and behavioral characteristics. All informational messages were presented subsequent to the video and delivered by one of four possible sources.

The four sources communicating the informational messages were: (a) a female on a videotape, (b) their teacher, (c) a hypothetical mother (i.e., enacted by a graduate student), and (d) an outside professional (i.e., a "doctor" enacted by the same graduate student portraying the mother). The female shown on the videotape was the same graduate student that performed the role of both "mother" and "doctor." Therefore, physical appearance was controlled for three out of the four sources.

After viewing the videotape and receiving the message randomly assigned to them, participants responded to a 32-item measure of cognitive attitudes, the *Adjective Checklist* (ACL; Siperstein & Bak, 1977; Appendix B); a 24-item measure of conative attitudes, the *Shared Activities Questionnaire* (SAQ; Morgan, Walker, Bieberich, & Bell, 1996; Appendix C); a 3-item measure of perceived similarity, the *Similarity Rating Form* (SRF; Appendix D); a 4-item measure of perceived responsibility, the *Perceived Responsibility Questionnaire* (PRQ; Appendix E); and a five-item questionnaire about the persuasiveness of the information source (Appendix F), and a KOA posttest. Participants and non-participants both received a small gift at the conclusion of the data collection and were debriefed about the purpose of the study.

*Measures.* The *Adjective Checklist* (ACL; Siperstein & Bak, 1977) has been used extensively in research examining students' attitudes toward children with disabilities (Appendix



B). The measure lists 32 adjectives, 16 positive (e.g., *smart*) and 16 negative (e.g., *dumb*). The ACL is scored by subtracting the total number of negative items from the total number of positive items and adding a constant of 20. Internal consistency reliability in the sample was  $\alpha = 0.69$ .

### Shared Activities Questionnaire

The *Shared Activities Questionnaire* (SAQ; Morgan et al., 1996) is a self-report scale developed for elementary school children; a modified form has been validated for middle school students (Campbell, in press; Appendix C). The original SAQ consists of 24 items grouped according to three domains: (a) Social (e.g., “Ask \_\_\_\_ to join my group of friends.”); (b) Academic (e.g., “Work on a science project at school with \_\_\_\_.”); and (c) Recreational (e.g., “Go to the movies with \_\_\_\_.”). Participants indicated their willingness to engage in each behavior as follows: *yes* (2 points), *maybe* (1 point), or *no* (0 points). For the present study, Campbell’s (in press) modified form was used with five responses: *yes, definitely* (5 points); *probably* (4 points); *maybe* (3 points); *probably not* (2 points); and *no, definitely not* (1 point). Cronbach’s  $\alpha = .97$  for the total SAQ, .92 for Social, .92 for Academic, and .94 for Recreational domains in the sample. Morgan’s three-factor structure was also confirmed for middle school students (Comparative Fit Index = 0.92; Root Mean-Square Error of Approximation = 0.79; Campbell, in press).

### Similarity Rating Form

The *Similarity Rating Form* (SRF) consists of three items to indicate similarity between the actor and participants (e.g., “How much is Robby like you?”) using a four-point scale (Very different = 1; Sort of different = 2; Sort of the same = 3; Very much the same = 4) (Appendix D).

Scores for the three items were summed and could range from 3-12 with higher scores indicating higher degree of similarity. Cronbach  $\alpha = .63$  for this sample of middle school students.

#### Perceived Responsibility Questionnaire

The *Perceived Responsibility Questionnaire* (PRQ), a four-item measure, required participants to respond to statements about the actor's controllability and responsibility for his behavior (e.g., "Robby can control what he is doing,") using a four-point scale (Very false = 1; Mostly false = 2; Mostly true = 3; Very true = 4) (Appendix E). Scores for the four items were summed and could range from 4-16 with higher scores indicating higher degree of responsibility. In this sample, Cronbach's  $\alpha = .58$ .

#### Source Persuasiveness Measure

The *Source Persuasiveness Measure* (COM), a five-item measure, was also created to assess the participants' perception of the information source (e.g., "I trust what [source] said"). The items were selected to measure four aspects of source credibility: expertise, trustworthiness, similarity, and likeability and rated on a four-point scale (Very false = 1; Mostly false = 2; Mostly true = 3; Very true = 4) (Appendix F). Cronbach's  $\alpha = .73$  for the sample.

*Data Analysis.* Two analyses were used to answer the first three research questions presented above. ACL data were analyzed using a Source (4) x Message (5) x Sex (2) factorial analysis of variance (ANOVA). SAQ data were analyzed using a Source (4) x Message (5) x Sex (2) multivariate analysis of variance (MANOVA) with SAQ academic, social, and recreational scores identified as dependent variables. In the presence of significant main or interaction effects in either the ANOVA or MANOVA, follow-up analyses were conducted.

A Principal Axis Factor (PAF) analysis was performed on the Source Persuasiveness (COM) items in order to determine whether each item is representative of an overarching factor

(i.e., the persuasiveness of source) or if more than one construct is represented in the items. The results of the PAF dictated how subsequent analyses regarding the effect of perceptions of source were performed. Multiple regression analyses were used to test for the potential mediating effect of persuasiveness (Figure 1) according to Holmbeck's (1997) guidelines. Separate analyses were conducted for both groups of dependent variables, i.e., the ACL total score and SAQ domain scores. In the presence of interactive effects, moderated mediation analyses were conducted (e.g., Rose, Holmbeck, Coakley, & Franks, 2004).

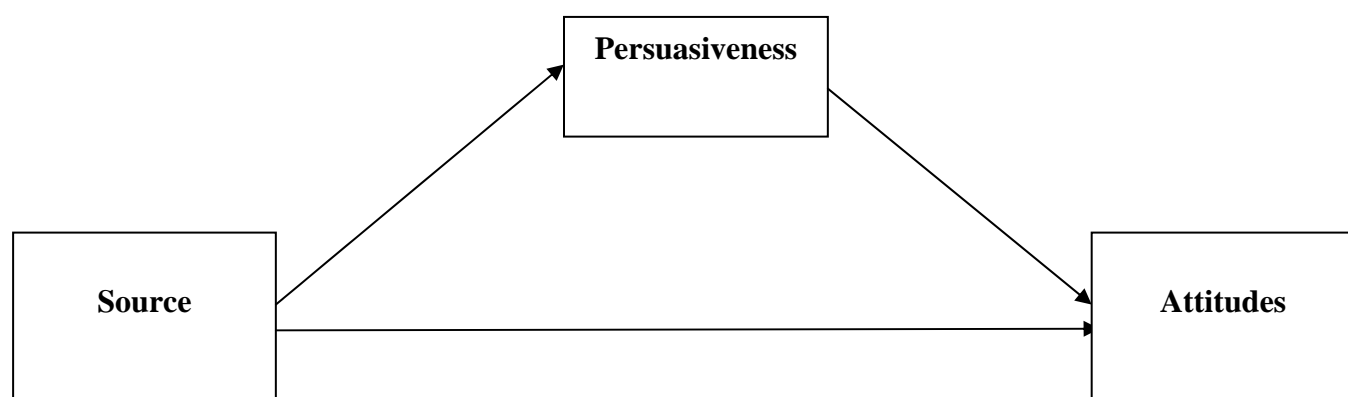


Figure 1. Proposed analysis of possible mediating effect of persuasiveness on the impact of source on cognitive attitudes and behavioral intentions.

### Results

A chi-square analysis revealed no significant differences in the proportion of males and females across experimental conditions of Source [ $\chi^2 = 4.61, p=.202$ ] or Message [ $\chi^2 = 1.30, p=.861$ ] (Table 1). Additional chi-square analyses demonstrated an equal representation of students in sample size [ $\chi^2 = 3.78, p=.987$ ] (Table 2), and a 4 (Source) x 5 (Message) x 2 (Sex) ANOVA did not demonstrate significant differences in age across experimental conditions [Message:  $F(4, 724) = 1.83, p=.12$ ; Source:  $F(4, 724) = 1.41, p=.24$ ] (Table 3).

*Cognitive attitudes (ACL).* A 4 (Source) x 5 (Message) x 2 (Sex) ANOVA was used to analyze ACL total scores (see Table 4 for means). The analysis revealed a significant main

effect for Message, [ $F(4, 728) = 46.35, p < .001$ ], but not for Source [ $F(3, 728) = .346, p = .79$ ] or Sex [ $F(1, 728) = 3.55, p = .06$ ]. According to multiple comparisons of group means using the Bonferroni method ( $p < .05$ ), the control condition (NOAUT) yielded ACL scores that were significantly different from all of the four message conditions; the greatest difference found was between NOAUT and NOINFO conditions ( $M_{\text{difference}} = 6.77, SE = .54, p < .001$ ). Within the AUT conditions, Descriptive information (DINFO) led to more positive attitudes than the NOINFO condition ( $M_{\text{difference}} = 2.44, SE = .54, p < .001$ ) and the Explanatory (EINFO) condition ( $M_{\text{difference}} = 2.06, SE = .53, p < .05$ ); however significant mean differences were not found between the DINFO and a combination of Explanatory and Descriptive information (D+E-INFO).

The ANOVA also revealed a significant Source x Sex interaction, [ $F(3, 728) = 3.99, p < .05$ ]. Follow-up contrasts using the Bonferroni method ( $p < .05$ ) showed that females ( $M = 22.98$ ) reported more favorable attitudes than males ( $M = 20.91$ ) when the source providing the information was the “mother” of the hypothetical student with autism. No significant differences were found for source across female ACL scores [ $F(3, 440) = 1.52, p = .21$ ] or male ACL scores [ $F(3, 320) = 1.58, p = .20$ ]. No significant differences were found between male and female ACL scores when the source of information was Videotape, Teacher, or Doctor.

*Conative attitudes (SAQ).* A 4 (Source) x 5 (Message) x 2 (Sex) MANOVA was used to analyze SAQ Domain scores. The MANOVA revealed a significant main effect for Sex [Wilks'  $\Lambda = 0.92, F(3, 715) = 20.84, p < .001$ ], and a significant interaction between Message and Source [Wilks'  $\Lambda = .896, F(36, 2113) = 2.23, p < .001$ ] (means for each SAQ domain are presented in Tables 6-8). Follow-up analyses using the Bonferroni method ( $p < .05$ ) revealed

that females reported higher SAQ Social and SAQ Academic scores than males [(SAQ Social:  $M_{\text{difference}} = 1.14$ ,  $SE = .54$ ; SAQ Academic  $M_{\text{difference}} = 2.67$ ,  $SE = .54$ , see Table 9 for means)]. No main effect was found for SAQ Recreational Scores (see Table 9 for means). In order to explore the Message x Source interaction, separate ANOVAs were performed for each SAQ domain as the dependent variable.

A significant Message x Source interaction was found for all three SAQ Domains [Social:  $F(12, 747) = 3.47$ ,  $p < .001$ ; Academic:  $F(12, 747) = 3.59$ ,  $p < .001$ ; and Recreational:  $F(12, 747) = 3.61$ ,  $p < .001$ ]. Follow-up analyses regarding the Social domain interaction showed that attitudes were significantly lower when No Information was communicated via videotape [ $F(3, 142) = 9.27$ ,  $p < .001$ ] as opposed to the other three sources (see Table 10). The effects of message at source was significant only for videotape [ $F(4, 183) = 7.18$ ,  $p < .001$ ]; significant differences were found between the No Information condition and the No Autism condition ( $M_{\text{difference}} = -7.66$ ,  $SE = 1.61$ , see Table 10 for means) and between No Information and Explanatory information ( $M_{\text{difference}} = -7.04$ ,  $SE = 1.61$ , see Table 10 for means).

Follow-up analyses regarding the Academic domain showed significant differences across Source for the No Information condition [ $F(3, 142) = 9.09$ ,  $p < .001$ ]; the Videotape yielded lower scores on the SAQ Academic domain than all three in-vivo sources, which did not differ. The effects of Message at Source was significant only for Videotape [ $F(4, 184) = 7.34$ ,  $p < .001$ ]; significant differences were found between the No Information condition and the No Autism condition ( $M_{\text{difference}} = -8.75$ ,  $SE = 1.66$ , see Table 11 for means), the No Information condition and the Explanatory information condition ( $M_{\text{difference}} = -5.72$ ,  $SE = 1.66$ , see Table 11 for means). Significant differences were also found between No Autism and

Descriptive and Explanatory (D+E) information ( $M_{\text{difference}} = 5.02$ ,  $SE = 1.60$ , see Table 11 for means).

Follow up analyses for the Recreational domain revealed Source effects for the No Autism [ $F(3, 139) = 3.31$ ,  $p < .05$ ], and Autism: No Information [ $F(3, 143) = 10.09$ ,  $p < .001$ ] conditions. Within the No Autism condition, Videotape yielded significantly higher attitude scores than the Teacher ( $M_{\text{difference}} = 4.41$ ,  $SE = 1.62$ ,  $p < .05$ ). For the Autism: No Information message, Videotape resulted in lower scores than all three other sources. The effects of Message at Source was significant for Videotape [ $F(4, 184) = 7.08$ ,  $p < .001$ ] and Doctor [ $F(4, 184) = 3.04$ ,  $p < .05$ ]. Within Videotape, significant differences were found between the No Information condition and the No Autism condition ( $M_{\text{difference}} = -7.69$ ,  $SE = 1.66$ , see Table 12 for means), between No Information and Explanatory information ( $M_{\text{difference}} = -7.52$ ,  $SE = 1.66$ , see Table 12 for means), and between No Information and Explanatory and Descriptive Information (D+E) ( $M_{\text{difference}} = -5.20$ ,  $SE = 1.59$ , see Table 12 for means). Within Doctor, significant differences were found between the No Autism condition and D+E Information ( $M_{\text{difference}} = -5.17$ ,  $SE = 1.78$ , see Table 12 for means), as well as between Explanatory Information and D+E Information ( $M_{\text{difference}} = -4.89$ ,  $SE = 1.70$ , see Table 12 for means).

*Perception of Source.* A Principal Axis Factor (PAF) analysis was performed on the five Source Persuasiveness (COM) items. The purpose of the PAF was to determine whether the COM items embody one construct (i.e., the persuasiveness of source) or if multiple factors were represented within the items. The results of the analysis revealed a one-factor solution, suggesting that all five items were accounted for by a single factor (Tables 13 and 14). Given these results, subsequent analyses regarding the effects of a source's persuasiveness on

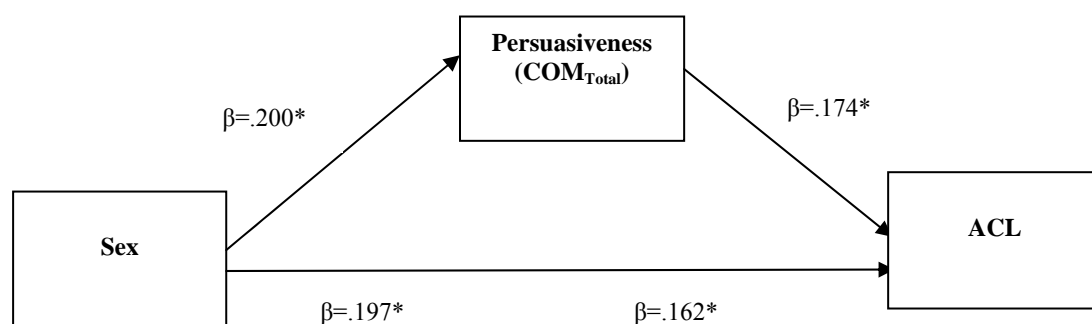
attitudes were performed using the total score from the five items as the dependent variable. A 4 (Source) x 5 (Message) x 2 (Sex) ANOVA was used to analyze the total score from COM items (Tables 15 and 16). The analysis revealed a significant main effect for Sex, [ $F(1, 713) = 6.44, p < .05, M_{\text{Male}} = 13.71, SE = .16; M_{\text{Female}} = 14.24, SE = .14$ ], indicating that females rated sources higher than males. A main effect was also found for Message [ $F(4, 713) = 9.31, p < .001$  see Table 15 for means] and for Source [ $F(3, 713) = 23.38, p < .001$ , see Table 15 for means]. According to multiple comparisons of group means using the Bonferroni method ( $p < .05$ ), perceptions of teacher were significantly lower than all three of the other sources, and videotape was rated significantly lower than the doctor but not the mother.

The ANOVA also revealed a significant Source x Sex interaction, [ $F(3, 713) = 2.98, p < .05$ ]. For male students, follow-up analyses showed a significant effect of source [ $F(3, 313) = 5.97, p < .05$ , see Table 16 for means]; Doctor was rated significantly higher than both the classroom teacher and Videotape, but not significantly different than Mother. Source also had a significant effect for females [ $F(3, 432) = 25.89, p < .001$ ]; girls rated their teachers as significantly less persuasive than the other three sources.

To further explore students' perceptions of source persuasiveness, ANOVAs were performed on each COM item individually. For example, the first analysis performed was an ANOVA in which source was the fixed factor, and COM-1 ([source] knows a lot about new students) was the dependent variable. The analyses for all five items showed some interesting trends in regard to source (Table 17). Based on comparisons of mean scores, the data shows that Mother and Doctor were rated higher than the teacher on likeability, expertise, and trustworthiness. The Doctor was also considered more of an expert than the Mother. Further,

the Videotape was rated as knowing more about new students than both Mother and Teacher; however, all three in-vivo sources were rated as more likeable than the Videotape.

*Persuasiveness of Source as a Mediator.* Multiple regression techniques were used to test the potential mediating effect of source persuasiveness on cognitive and conative attitudes, according to Holmbeck's (1997) guidelines. As a follow-up analysis of the Source x Sex interaction found for ACL scores, three regression analyses and the Sobel test ([www.psych.ku.edu/preacher/sobel/sobel.htm](http://www.psych.ku.edu/preacher/sobel/sobel.htm)) were conducted to test whether total COM scores (i.e., persuasiveness of source) mediated the relationship between Sex and ACL scores when "mother" was source. Prior to the analyses, Gender was dummy coded (0 = male, 1 = female). The figure below illustrates the regression analyses performed.



**Figure 2.** The standardized beta coefficients are presented above. There are two values for the Sex → ACL link; the coefficient on the left represents the equation when Sex is the only predictor of ACL scores, and the coefficient on the right is the value when Sex and COM total are used as predictors.

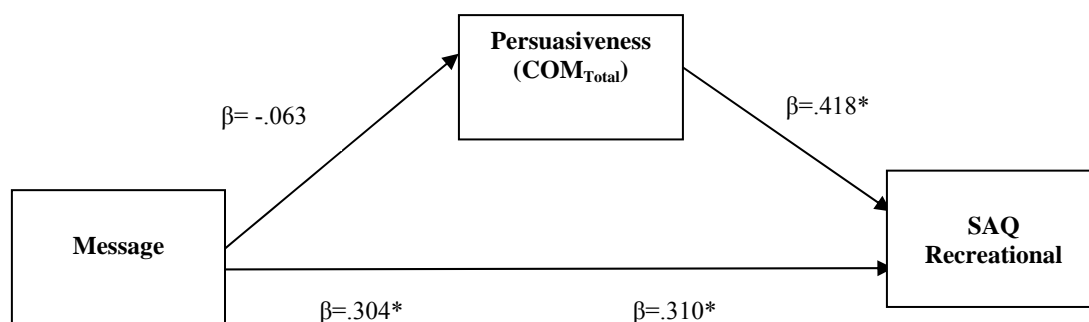
\* = regression coefficient is significant at  $p < .05$  level.

Unstandardized beta coefficients from two regression analyses were entered into the Sobel test to evaluate whether COM<sub>Total</sub> mediated the relationship between Sex and ACL scores, when the source of the information is the mother. The results of the Sobel test revealed that the persuasiveness of the source (COM<sub>Total</sub>) did not have a significant mediating effect (Sobel



test statistic=1.85,  $p=0.06$ ). Given that  $COM_{Total}$  scores were close to reaching significance at the  $p<.05$  level, further regression analyses were conducted on specific COM items. The results of these analyses are presented in Table 18.

Multiple regression was also used as a follow-up of the Message x Source interaction found for SAQ Recreational Domain scores. When Doctor was source, the combination of Descriptive and Explanatory Information yielded more positive attitudes than Explanatory information alone. Regression analyses and the Sobel test were used to examine whether the persuasiveness of source ( $COM_{Total}$ ) mediates the relationship between Message and SAQ Recreational scores. Prior to the analyses, the two message conditions were dummy coded (Explanatory=0; Descriptive + Explanatory=1). The figure below demonstrates the analyses performed.



**Figure 3.** The standardized beta coefficients are presented above. There are two values for the Message→ SAQ Recreational link; the coefficient on the left represents the equation when Message is the only predictor of SAQ Recreational scores, and the coefficient on the right is the value when Message and COM total are used as predictors.

\* = regression coefficient is significant at  $p<.05$  level.

According to Holmbeck's (1997) guidelines, the link between Message and  $COM_{Total}$  must be significant in order for a mediation effect to be possible. Given that the regression coefficient for Message→  $COM_{Total}$  is negative, the Sobel test could not be used in this analysis. Further

regression analyses were performed on individual COM items. The results of the analyses are presented in Table 19. The Sobel test could only be used for two of the COM items (1 & 5). Similar to the COM<sub>Total</sub> score, items 2, 3, and 4 yielded negative regression coefficients when Message was the predictor.

Table 1. Description of Participants

<u>Source of Information</u>						
	Video ( <i>n</i> =189)	Teacher ( <i>n</i> = 193)	Mother ( <i>n</i> = 199)	Doctor ( <i>n</i> =189)	$\chi^2$	<i>p</i>
Sex					4.61	.202
Male	79	74	81	92		
Female	110	119	118	97		

<u>Message</u>						
	No Aut ( <i>n</i> =143 )	No Info ( <i>n</i> = 148)	D-Info ( <i>n</i> = 145)	E-Info ( <i>n</i> =165)	D+E Info ( <i>n</i> =169)	$\chi^2$ <i>p</i>
Sex						1.30   .861
Male	58	61	58	74	75	
Female	85	87	87	91	94	

Note. No Aut = No symptoms of Autism displayed; No Info = No Information; D-Info = Descriptive Information; E-Info = Explanatory Information; D+E INFO = Descriptive and Explanatory Information.

Table 2. Number of participants in Experimental Conditions

<u>Message</u>	<u>Source</u>					$\chi^2$	<i>p</i>
	Videotape	Teacher	Mother	Doctor	Total(N)		
No Aut	36	37	33	37	143	3.78	.987
No Info	38	37	39	34	148		
D-Info	37	35	42	32	146		
E-Info	36	40	46	44	166		
D+E-Info	43	46	39	42	170		
Total (N)	190	195	199	189	<b>773</b>		

Note. No Aut = No symptoms of Autism displayed; No Info = No Information; D-Info = Descriptive Information; E-Info = Explanatory Information; D+E INFO = Descriptive and Explanatory Information.

Table 3. Age of Participants: Sex by Source by Message

<u>Source</u>	Sex	<u>Message</u>				
		No Aut	No Info	D-Info	E-Info	D+E Info
Videotape	Male	13.12 (1.03)	12.55 (.74)	13.10 (.80)	13.03 (.85)	12.93 (.96)
	Female	12.80 (.90)	12.85 (.96)	13.08 (.76)	12.99 (.91)	13.10 (.80)
Teacher	Male	12.70 (1.10)	12.51 (.75)	13.13 (.84)	12.62 (1.08)	12.75 (.79)
	Female	13.07 (.83)	12.89 (.92)	12.79 (.86)	12.80 (.99)	13.06 (.99)
Mother	Male	13.22 (.98)	12.90 (1.00)	12.95 (.79)	12.92 (.84)	12.60 (1.02)
	Female	12.67 (.80)	12.82 (.99)	12.81 (.86)	12.99 (.87)	13.17 (.94)
Professional	Male	13.03 (.88)	12.97 (.80)	13.13 (.73)	12.67 (.92)	13.27 (.88)
	Female	12.87 (.86)	12.79 (1.07)	12.83 (.81)	13.11 (.91)	13.53 (.92)

Note. Age in years. Standard deviations appear in parentheses. No Aut = No symptoms of Autism displayed; No Info = No Information; D-Info = Descriptive Information; E-Info = Explanatory Information; D+E INFO = Descriptive and Explanatory Information.

Table 4: Cognitive Attitudes (ACL scores) by Message, Source, and Sex

<u>Source</u>	<u>Sex</u>	<u>Message</u>				
		<u>No Aut</u>	<u>No Info</u>	<u>D-Info</u>	<u>E-Info</u>	<u>D+E Info</u>
Videotape	Male	29.07 (3.24)	19.86 (3.90)	23.79 (5.32)	21.29 (4.94)	20.25 (5.00)
	Female	27.81 (4.23)	18.35 (3.66)	21.30 (4.88)	20.52 (4.46)	21.05 (3.24)
Teacher	Male	26.27 (4.98)	21.47 (4.53)	23.00 (6.51)	19.00 (4.39)	22.90 (4.47)
	Female	26.38 (6.28)	20.86 (4.22)	23.79 (3.76)	20.62 (4.24)	21.62 (4.25)
Mother	Male	24.42 (5.70)	19.63 (2.87)	20.06 (4.62)	20.45 (4.36)	21.13 (5.73)
	Female	26.33 (5.62)	20.30 (5.16)	23.50 (4.98)	22.27 (4.16)	22.88 (4.28)
Professional	Male	27.10 (4.24)	19.60 (4.97)	20.81 (7.02)	18.62 (6.21)	21.55 (3.98)
	Female	27.12 (2.71)	21.05 (3.87)	24.19 (5.18)	20.70 (3.51)	22.55 (3.71)

Note. Standard deviations appear in parentheses. No Aut = No symptoms of Autism displayed;  
 No Info = No Information; D-Info = Descriptive Information; E-Info = Explanatory Information;  
 D+E INFO = Descriptive and Explanatory Information.

Table 5. Means and Standard Deviations for Adjective Checklist (ACL) by Sex and Source

<u>Source</u>	<u>Sex</u>	
	Male	Female
Videotape	22.72 (5.61)	21.73 (5.14)
Teacher	22.18 (5.26)	22.78 (5.10)
Mother	20.91 (4.82) <sub>a</sub>	22.98 (5.11) <sub>a</sub>
Doctor	21.64 (6.08)	22.89 (4.40)

Note. Standard deviations appear in parentheses. Row means with like alphabetic subscripts differed on post hoc testing using Bonferroni correction ( $p < .05$ ).

Table 6. Means and Standard deviations for SAQ Social Domain scores

<u>Source</u>	<u>Sex</u>	<u>Message</u>				
		<u>No Aut</u>	<u>No Info</u>	<u>D-Info</u>	<u>E-Info</u>	<u>D+E Info</u>
Videotape	Male	28.40 (5.90)	21.60 (7.52)	23.00 (10.08)	26.80 (7.76)	23.75 (4.82)
	Female	27.62 (6.18)	19.55 (4.78)	24.95 (8.23)	27.71 (7.05)	25.91 (6.98)
Teacher	Male	26.36 (6.89)	26.60 (7.61)	24.60 (8.50)	21.89 (8.04)	28.25 (7.95)
	Female	24.35 (6.00)	28.33 (8.15)	26.54 (8.57)	27.40 (9.26)	27.21 (4.15)
Mother	Male	24.83 (4.88)	26.06 (6.55)	23.83 (7.29)	25.37 (10.04)	23.80 (9.10)
	Female	25.43 (6.23)	28.87 (7.39)	29.29 (6.06)	25.62 (6.48)	26.58 (8.32)
Professional	Male	24.68 (7.77)	23.64 (6.77)	25.56 (8.67)	24.05 (5.83)	27.80 (6.04)
	Female	24.88 (5.06)	27.11 (7.23)	22.47 (8.82)	24.73 (6.78)	29.23 (7.70)

Note. Standard deviations appear in parentheses. No Aut = No symptoms of Autism displayed;  
 No Info = No Information; D-Info = Descriptive Information; E-Info = Explanatory Information;  
 D+E INFO = Descriptive and Explanatory Information



Table 7. Means and Standard deviations for SAQ Academic Domain scores

<u>Source</u>	<u>Sex</u>	<u>Message</u>				
		<u>No Aut</u>	<u>No Info</u>	<u>D-Info</u>	<u>E-Info</u>	<u>D+E Info</u>
Videotape	Male	27.73 (6.78)	21.13 (8.37)	23.31 (9.00)	25.00 (8.24)	23.45 (5.46)
	Female	31.05 (6.20)	20.77 (5.14)	26.82 (7.52)	27.81 (6.58)	26.23 (7.60)
Teacher	Male	25.55 (6.28)	28.60 (7.90)	24.30 (6.36)	22.22 (7.57)	26.40 (7.55)
	Female	26.08 (7.36)	29.86 (7.53)	27.67 (7.74)	28.65 (8.83)	27.42 (4.70)
Mother	Male	23.92 (7.32)	25.31 (7.17)	22.72 (7.23)	23.95 (9.73)	23.07 (8.86)
	Female	26.52 (5.42)	28.17 (7.00)	29.21 (5.53)	26.88 (5.38)	26.75 (8.65)
Professional	Male	23.68 (7.56)	22.36 (5.34)	26.06 (7.73)	23.75 (5.40)	27.30 (5.79)
	Female	24.71 (4.88)	29.32 (7.33)	23.13 (9.19)	26.50 (6.82)	29.59 (8.91)

Note. Standard deviations appear in parentheses. No Aut = No symptoms of Autism displayed;  
 No Info = No Information; D-Info = Descriptive Information; E-Info = Explanatory Information;  
 D+E INFO = Descriptive and Explanatory Information

Table 8. Means and Standard Deviations for SAQ Recreational Domain scores

<u>Source</u>	<u>Sex</u>	<u>Message</u>				
		<u>No Aut</u>	<u>No Info</u>	<u>D-Info</u>	<u>E-Info</u>	<u>D+E Info</u>
Videotape	Male	24.20 (6.37)	19.07 (7.87)	21.31 (9.70)	25.33 (8.05)	22.55 (6.18)
	Female	25.81 (5.33)	16.45 (4.73)	22.32 (8.46)	24.71 (7.71)	23.14 (7.88)
Teacher	Male	24.18 (7.26)	24.60 (9.58)	22.60 (8.81)	21.56 (8.42)	26.15 (8.74)
	Female	19.27 (5.80)	27.00 (7.87)	22.50 (9.11)	25.20 (10.71)	25.21 (5.12)
Mother	Male	25.92 (6.37)	23.94 (6.93)	21.00 (8.01)	22.89 (9.73)	21.47 (9.71)
	Female	22.86 (7.94)	26.35 (8.27)	25.75 (8.14)	23.77 (6.58)	24.08 (9.86)
Professional	Male	21.47 (8.60)	21.64 (6.52)	23.44 (9.11)	21.15 (6.64)	26.45 (7.84)
	Female	20.65 (6.62)	24.79 (8.03)	20.87 (8.34)	22.05 (7.46)	26.64 (9.36)

Note. Standard deviations appear in parentheses. No Aut = No symptoms of Autism displayed;  
 No Info = No Information; D-Info = Descriptive Information; E-Info = Explanatory Information;  
 D+E INFO = Descriptive and Explanatory Information.

Table 9. Means and Standard Errors of SAQ Domains by Sex

<u>SAQ Domain</u>	<u>Sex</u>	
	Male	Female
Social	25.04 <sub>a</sub> (.41)	26.19 <sub>a</sub> (.35)
Academic	24.49 <sub>b</sub> (.41)	27.16 <sub>b</sub> (.35)
Recreational	23.05 (.45)	23.47 (.38)

Note. Standard errors appear in parentheses. Row means with like alphabetic subscripts differed on post hoc testing using Bonferroni correction ( $p < .05$ ).

Table 10. Means and Standard Deviations of SAQ Social Domain by Message and Source

<u>Message</u>	<u>Source</u>			
	<u>Video</u>	<u>Teacher</u>	<u>Mother</u>	<u>Doctor</u>
No Aut	27.94 <sup>1</sup> (5.99)	24.95 (6.25)	25.21 (5.70)	24.78 (6.54)
Aut: No Info	20.29 <sup>1,2</sup> <sub>a,b,c</sub> (5.97)	27.61 <sub>a</sub> (7.87)	27.72 <sub>b</sub> (7.10)	25.29 <sub>c</sub> (7.62)
D-Info	24.23 (8.87)	25.83 (8.39)	26.95 (7.08)	24.19 (8.63)
E-Info	27.33 <sup>2</sup> (7.26)	24.45 (8.95)	25.65 (8.03)	24.49 (6.23)
D+E Info	24.60 (6.27)	27.33 (6.26)	25.51 (8.62)	28.55 (6.91)

Note. Standard deviations appear in parentheses. No Aut = No symptoms of Autism displayed; No Info = No Information; D-Info = Descriptive Information; E-Info = Explanatory Information; D+E INFO = Descriptive and Explanatory Information. Row means with similar alphabetic subscripts differed on post hoc testing using Bonferroni correction ( $p < .05$ ). Column means with like numeric superscripts differed on post hoc testing using Bonferroni correction ( $p < .05$ ).

Table 11. Means and Standard Deviations of SAQ Academic Domain by Message and Source

<u>Message</u>	<u>Video</u>	<u>Source</u>		
		<u>Teacher</u>	<u>Mother</u>	<u>Doctor</u>
No Aut	29.67 <sup>1,3</sup> (6.56)	25.92 (6.98)	25.58 (6.19)	24.54 (6.68)
Aut: No Info	20.92 <sup>1,2</sup> <sub>a,b,c</sub> (6.52)	29.33 <sub>a</sub> (7.60)	27.00 <sub>b</sub> (7.12)	26.71 <sub>c</sub> (7.51)
D-Info	25.43 (8.10)	26.54 (7.36)	26.43 (7.03)	24.65 (8.46)
E-Info	26.64 <sup>2</sup> (7.34)	25.13 (8.83)	25.80 (7.57)	25.02 (6.29)
D+E Info	24.65 <sup>3</sup> (6.86)	26.95 (6.10)	25.33 (8.81)	28.50 (7.58)

Note. Standard deviations appear in parentheses. No Aut = No symptoms of Autism displayed; No Info = No Information; D-Info = Descriptive Information; E-Info = Explanatory Information; D+E INFO = Descriptive and Explanatory Information. Row means with similar alphabetic subscripts differed on post hoc testing using Bonferroni correction ( $p < .05$ ). Column means with similar numeric superscripts differed on post hoc testing using Bonferroni correction ( $p < .05$ ).

Table 12. Means and Standard Deviations of SAQ Recreational Domain by Message and Source

<u>Message</u>	<u>Video</u>	<u>Source</u>		
		<u>Teacher</u>	<u>Mother</u>	<u>Doctor</u>
No Aut	25.14 <sup>1</sup> <sub>a</sub> (5.76)	20.73 <sub>a</sub> (6.57)	23.97 (7.46)	21.38 <sup>1</sup> (7.74)
Aut: No Info	17.45 <sup>1,2,3</sup> <sub>a,b,c</sub> (6.16)	26.00 <sub>a</sub> (8.58)	25.36 <sub>b</sub> (7.74)	23.79 <sub>c</sub> (7.63)
D-Info	21.97 (8.69)	22.34 (8.83)	23.71 (8.34)	22.00 (8.63)
E-Info	24.97 <sup>2</sup> (7.75)	23.56 (9.63)	23.40 (7.97)	21.66 <sup>2</sup> (6.89)
D+E Info	22.65 <sup>3</sup> (7.08)	25.64 (6.93)	23.08 (9.76)	26.55 <sup>1,2</sup> (8.57)

Note. Standard deviations appear in parentheses. No Aut = No symptoms of Autism displayed; No Info = No Information; D-Info = Descriptive Information; E-Info = Explanatory Information; D+E INFO = Descriptive and Explanatory Information. Row means with similar alphabetic subscripts differed on post hoc testing using Bonferroni correction ( $p < .05$ ). Column means with similar numeric superscripts differed on post hoc testing using Bonferroni correction ( $p < .05$ ).

Table 13. Correlation Matrix of Source Persuasiveness Items (COM)

Item	1. Know a lot	2. Trust	3. Liked	4 Expert on autism	5 Similar
1. Know a lot	1.000				
2. Trust	.356*	1.000			
3. Liked	.325*	.528*	1.000		
4. Expert on autism	.404*	.373*	.299*	1.000	
5. Similar	.242*	.313*	.424*	.296*	1.000

Note. \* = correlations are significant at the  $p < .001$  level.

Table 14. Factor Loadings for COM items

	Factor 1
COM 1-Know a lot about autism	.536
COM2-Trust	.690
COM3-Liked	.690
COM 4-Expert on autism	.553
COM 5- Similar	.519



Table 15. Means and Standards Deviations of Total Source Persuasiveness Measure scores

<u>Source</u>	<u>No Aut</u>	<u>No Info</u>	<u>D-Info</u>	<u>E-Info</u>	<u>D+E Info</u>	<b>Total</b>
Videotape	12.91 (2.84)	13.39 (3.03)	13.89 (2.84)	14.92 (3.30)	14.43 (2.86)	13.91 <sup>1,3</sup> (3.03)
Teacher	12.19 (3.44)	13.83 (2.79)	11.12 (3.79)	13.22 (3.07)	12.48 (2.76)	12.58 <sup>1,2,3</sup> (3.26)
Mother	13.56 (2.73)	14.31 (2.89)	13.73 (3.16)	15.53 (2.32)	15.32 (2.68)	14.54 <sup>2</sup> (2.85)
Professional	14.29 (2.31)	15.79 (1.93)	14.19 (2.27)	15.65 (2.53)	15.35 (2.30)	15.10 <sup>3</sup> (2.36)
<b>Total</b>	13.26 <sub>a,c,d</sub> (.244)	14.28 <sub>a,b</sub> (.235)	13.17 <sub>b,c,d</sub> (.245)	14.78 <sub>c</sub> (.222)	14.36 <sub>d</sub> (.220)	

Note. Standard deviations appear in parentheses. No Aut = No symptoms of Autism displayed; No Info = No Information; D-Info = Descriptive Information; E-Info = Explanatory Information; D+E INFO = Descriptive and Explanatory Information. Row means with similar alphabetic subscripts differed on post hoc testing using Bonferroni correction ( $p < .05$ ). Column means with similar numeric superscripts differed on post hoc testing using Bonferroni correction ( $p < .05$ ).

Table 16. Means and Standard Deviations of COM total scores by Source and Sex

<u>Source</u>	<u>Sex</u>	
	Male	Female
Videotape	13.41 (3.14) <sup>1</sup>	14.28 (2.91) <sup>1</sup>
Teacher	12.97 (3.27) <sup>2</sup>	12.33 (3.24) <sup>1,2,3</sup>
Mother	13.85 (3.17)	15.01 (2.52) <sup>2</sup>
Doctor	14.86 (2.43) <sup>1,2</sup>	15.32 (2.29) <sup>3</sup>

Note. Standard deviations appear in parentheses. Column means with like numeric superscripts differed on post hoc testing using Bonferroni correction ( $p < .05$ ).

Table 17. Perception of Source by individual COM items

	Videotape (+)	Teacher (+)	Mother (+)	Doctor (+)
Videotape (-)	---	Liked	Liked	Liked
Teacher (-)	Knowledgeable, Expert	---	Trust, Liked, Expert, Similar	Knowledgeable, Trust, Liked, Expert
Mother (-)	Knowledgeable		---	Knowledgeable, Expert
Doctor (-)				---

Note. Results of this table are based on observed means that were significant at the .05 level. The columns (+) indicate that mean scores for the source are higher and the rows (-) indicate that mean scores for the source are lower. For example, the adjectives listed in the column 1, row 2 (Knowledgeable, Expert), indicate that the videotape was considered significantly more knowledgeable and more of an expert than the teacher.

Table 18. Results from Sobel test examining mediation for the five COM items (ACL scores)

<u>COM Item</u>	<u>Sobel test value</u>	<u>P</u>
1. Knows a lot about new students	0.06	0.95
2. Trust	1.41	0.16
3. Likeability	2.21	0.03*
4. Expert	1.41	0.16
5. Similar	0.97	0.33

Note. \*indicates that the Sobel test statistic is significant at  $p<.05$  level.

Table 19. Results from Sobel test examining mediation for COM items (SAQ Recreational scores)

<u>COM Item</u>	<u>Sobel test value</u>	<u>P</u>
1. Knows a lot about new students	-----	-----
2. Trust	0.69	0.48
3. Likeability	-----	-----
4. Expert	-----	-----
5. Similar	1.19	0.23

Note. ---- indicates that the Sobel test could not be calculated due to negative regression coefficients.

### *Discussion*

The goal of this study is to provide empirical evidence that will inform future educational interventions targeting middle school students' cognitive and conative attitudes towards peers with autism. Students with autism (SWA) are being included in mainstream classrooms more frequently than in the past, and research has shown that interventions, particularly peer-mediated techniques, are essential to the successful integration of these students (Harrower & Dunlap, 2001; McConnell, 2002; Rogers, 2000). SWA often exhibit pervasive social and communication disabilities that may preclude social acceptance by typical students. Therefore, an essential part of the inclusion process is peer education about the disorder. The current study investigates the use of educational interventions designed to improve typical peers' negative attitudes towards a student with autism.

The essential question posed in this study was whether different sources providing information in an education intervention impacted middle school student's cognitive attitudes and behavioral intentions towards an unfamiliar peer with autism. My predictions were that students' cognitive and conative attitudes would vary depending on which of four sources, (i.e., videotape, Teacher, "Mother," and "Doctor) presented the information, and that the students' perception of the source's credibility and persuasiveness would also vary across the four sources. My assumptions are rooted in theories of persuasive communication, which purport that a message's impact on the receiver is related to the receiver's perception of the source's persuasiveness and credibility. Therefore, the more credible a source is considered, the more persuasive their message will be for the audience. I also predicted that videotape would have the least impact on students' attitudes when compared to the other three sources.

Based on previous research findings regarding educational interventions about SWA, I anticipated that there would be interactions found between source and receiver characteristics. Further, I examined whether there is an interaction between the source of information and the type of message that is communicated. Morton and Campbell (2007) investigated the effects of source on elementary school students' attitudes when the message delivered by the source was held constant. In this study I wanted to investigate the interaction that potentially exists between the source and the use of different messages.

*Cognitive Attitudes.* Analyses of the Adjective Checklist (ACL) revealed a main effect for Message. Given that the No Autism (Control) condition was included in the analyses, the main effect of Message is consistent with previous findings regarding peers' attitudes towards unfamiliar students with autism (Campbell, 2005; Campbell et al., 2004; Swaim & Morgan). Therefore, students had more negative attitudes towards "Robby" when he displayed symptoms of autism versus when he did not. Within the autism conditions, Descriptive information yielded higher attitudes than Explanatory information alone. There was also no significant difference in attitudes between those students who received Descriptive information and those that received a combination of Descriptive and Explanatory information.

Contrary to my predictions, Source did not produce a main effect on the students' cognitive attitudes; however, a significant interaction was found between Source and Sex. Specifically, when Mother was Source, middle school girls reported more positive cognitive attitudes towards "Robby" than their male peers. No significant differences were found between males and females for any other source. This finding suggests that interventions using the SWA's mother as an information source will elicit more positive cognitive attitudes from female

middle school students than from male middle school students, regardless of the message communicated.

Regression analyses were performed to investigate the potential mediation of perceived credibility between Sex and ACL scores when Mother was the information source. The results showed that “likeability” mediated the relationship between Source and ACL scores. Therefore, the more likeable the mother was perceived to be by students, the more positive their cognitive attitudes were regardless of whether the child displayed symptoms of autism or not. This result is especially interesting given the effects found for Message above. As previously mentioned, Descriptive information elicited more positive cognitive attitudes than Explanatory information alone, and there was no significant difference between hearing Descriptive information and hearing a combination of Explanatory and Descriptive information. The justification for providing Descriptive information in an educational intervention is rooted in Heider’s (1958) cognitive consistency theory, which posits that perceived similarity with another is a positive experience which increases likeability. Therefore, these two statistical results, (a) Descriptive information produces a more positive effect on attitudes than Explanatory information, and (b) the “likeability” of Source mediates the relationship found between Sex and ACL scores, can be interpreted as further empirical support for using the principles of cognitive consistency theory in designing educational interventions.

*Conative Attitudes.* In the analyses of SAQ domain scores, girls reported more intentions to engage in both social and academic activities with “Robby” than their male counterparts. The results are consistent with previous studies that have demonstrated the general tendency for females to report more positive attitudes towards disabilities than males (Nabors & Larson, 2002; Nowicki, 2006; Bak & Siperstein, Rosenbaum et al., 1988). A significant relationship was also



found between Source and Message in students' endorsement of behavioral intentions. Students who watched a video of "Robby" displaying symptoms of autism followed by a message that lacked information (NO-INFO), had significantly lower conative attitudes than when the same message (NO-INFO) was delivered by one of the three in-vivo sources. This finding is especially interesting considering that the videotaped message is not presented as a voice-over, as it has been in previous studies (Morton & Campbell); rather, the video shows a female research assistant (the same woman playing the role of "mother" and "doctor") sitting at a table and delivering the message. The finding suggests that there is something about having a live source in the classroom presenting information that influences the students' responses. The implication being that, when possible, a live source should be used to deliver an educational intervention rather than a videotape. Or, if videotaped materials are to be used to educate a classroom, this should be supplemented with information presented in-vivo by another source.

Further effects of Message at Source were found within each specific domain of SAQ scores. For social and academic activities, the No Information message was significantly less effective in eliciting behavioral intentions than the Explanatory condition when Videotape was source. For recreational activities, both Doctor and Videotape showed significant interactions with Message. When Videotape was Source, Explanatory information and the combination of Descriptive and Explanatory information were significantly better at eliciting behavioral intentions than providing No Information. When Doctor provided a combination of Descriptive and Explanatory information, more students reported that they would participate in recreational activities with Robby than when she provided Explanatory information alone. Follow-up regression analyses were performed to investigate the potential mediation of perceived credibility between Message and SAQ Recreation scores when Doctor was the information

source. A negative relationship was found between Message and COM<sub>Total</sub>, therefore, the mediation hypothesis was ruled out. Further analyses involving individual COM items also did not show evidence that any of the items mediated the interaction between Message and SAQ Recreational scores.

*Persuasiveness of Source.* Results showed that students rated their teachers less favorably than all of the other sources on COM items, including the videotape. A possible explanation for this finding could be that it is simply an artifact of the study's design. The study asked that the teachers read their message the class from a script, which could have discredited the teacher's expertise about the subject matter from the perspective of the student. Nevertheless, research on persuasive communication suggests that perceived credibility of a source is said to be determined by the receiver's impressions of two characteristics: trustworthiness and expertise, with trustworthiness outweighing perceived expertise (Pornpitakpan, 2004). It would be assumed that students would be more trusting of a known source, such as their classroom teacher, but our results suggest otherwise. Students in our sample rated their teachers as less trustworthy than both Mother and Doctor, and less of an expert than all of the other three sources. Therefore, middle school students considered a videotape to have higher expertise than their teachers.

It was also particularly interesting that Doctor was rated higher on expertise than Mother, given that the roles were played by the same person. This can be seen as a demonstration that students will assign credibility to a person based on their occupation rather than the information they communicate. Although an overall comparison across Sex showed that females rated all four sources higher than males, there were significant differences found within each group. For males, the Doctor was considered more credible than both the classroom teacher and the

videotape, but not the mother. Girls only differentiated their teachers from the others, rating them as significantly less credible than the remaining three sources.

*Conclusions and Practical Implications.* Contrary to my predictions, the identity of the source did not produce main effects on either cognitive or conative attitudes; however, interactions were found between both Source and Sex and Source and Message. The results of this study hold some implications for future educational interventions at the middle school level. Previous findings have shown that fifth grade students have been shown to respond more to extra-familial sources of information (Morton & Campbell) when compared with lower elementary grades. I predicted that a similar pattern would be found in the current middle-school sample, with students responding less to the explanatory message when the Mother is the source, rather than their teacher or a Doctor. No such pattern was found. In fact, Mother as source was found to be more effective for middle school girls than for middle school boys regardless of the message. Further, the “likeability” of Mother appears to mediate her effect on students’ cognitive attitudes.

In the absence of Explanatory and Descriptive information, videotape produced the least effect on students’ behavioral intentions to participate in social, academic, and recreational activities with a hypothetical peer with SWA. The implications of these findings are that it is more effective to use a live source, preferably someone who is perceived as “likeable” by the audience, when designing educational interventions for middle school students. If a videotape needs to be used as the source, a combination of descriptive and explanatory information is recommended, and the video should be supplemented with information presented in vivo by another source.

Further, classroom teachers may not be as effective as either the child's mother or his doctor for this population of students. If a Doctor is used for the source, these findings suggest that a combination of Descriptive and Explanatory information be used in order to encourage typical students to participate in recreational activities with SWA.

*Limitations of Study and Suggestions for Future Research.* The results of this study must be interpreted within the context of its limitations. One major limitation is that the study is an analogue design; students are asked to watch a video of an unfamiliar boy who is hypothetically going to be included in their classroom rather than observing a live child within their classroom. In addition, the outcome variables were not supplemented by observable behavior. Students are asked to answer questions about how they *believe they would* act if Robby was in their class. In order to increase the validity of the research, future studies should consider presenting information to a classroom that is actually planning to include a student with autism, and then observing and measuring the students' social interactions once he has joined the class.

Characteristics of the sample may also limit the generalizability of the findings. The study included middle school students from three schools in Georgia; two of the schools were located in the same county and were very similar in terms of size, socioeconomic status (SES), and percentage of enrolled students with disabilities. The third school was significantly larger, had a higher SES, and a lower percentage of students with disability. The overall participation rate across all three of the schools was only 38.50% (i.e., 773 participants out of 2,008 eligible students). Future studies should consider using a more diversified sample of students, and perhaps investigating possible causes of low participation rates.

Further, the classroom teacher was the only "known" source used. Given that the teachers were rated more negatively in terms of trustworthiness and expertise, it would be

interesting to investigate the use of different known sources in educational interventions. For example, having information delivered by a familiar source such as an administrator or the school nurse, may illuminate differences in source perception and influences on attitudes. A study using familiar sources would have significant practical implications given that school professionals are often called upon to introduce new students and facilitate successful integration.

Given the limitations of the study, further research is needed to support these conclusions. However, results do suggest that information source plays a role in the impact of educational interventions regarding autism on typical peers. Also, conceptualizing the introduction of a SWA to a general education classroom as a process of persuasive communication served as a helpful framework to elucidate factors that impact interventions. Students with autism will continue to be included in general education classrooms with typical peers. Therefore it is critical that professionals to continue the investigate practices, such as educational interventions, that foster successful inclusion of these students.

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## CHAPTER 4

### DISSERTATION CONCLUSION

Autism Spectrum Disorders (ASDs) are a category of neurodevelopmental disabilities characterized by impairments in social interaction, communication, and restricted interests/repetitive behaviors. Included within the autism spectrum are Autism, Asperger's Disorder, Rett's Disorder, Childhood Disintegrative Disorder, and Pervasive Developmental Disorder—Not Otherwise Specified, with Autism being the most prevalent among the group (American Psychiatric Association, 2000). Current educational legislation, such as the Individuals with Disabilities Education Improvement Act of 2004 (IDEIA, 2004), has resulted in an increased effort to grant students with autism (SWA) access to general education classrooms. Given both the increase in the prevalence of autism, and the established tenets of educational policy, the conclusion can be made that more students with autism (SWA) are being included in mainstream classrooms than in the past.

Due to the pervasive social and communication problems exhibited by SWA, individual programming is needed to support the inclusion process. Typical peers have been implicated as socially valid interventionists for SWA. Peer-mediated techniques such as peer tutoring and peer networks, have gained empirical support in the academic and social inclusion of SWA. However, the efficacy of peer-mediated interventions is inherently dependent on the motivations and actions of the typical peer. Several peer-mediated interventions are voluntary; therefore, in order to increase their use more peers need to be willing to interact with SWA.

In Chapter 2 of this dissertation, I presented a review of literature that illustrates the importance of typical peers in the inclusion of SWA, and describes interventions designed to improve peers' negative attitudes towards these students. I also highlighted empirical evidence regarding peer-mediated interventions for SWA, discussed theoretical conceptualization of attitude formation and change, and reviewed attitude modification techniques. I specifically focused on educational interventions regarding SWA, and used Campbell's (2006) conceptualization of peer education about SWA as an application of social persuasion theory to frame the objectives of my current study.

The objective of my empirical study was to add to the research literature regarding educational interventions for peer attitudes towards SWA. Specifically, I investigated the impact of information source on the attitudes of 773 middle school students towards a peer with autism. Students in the study viewed a 63-second videotape of a 14-year-old male actor, "Robby," portraying a child who either shows symptoms of autism (AUT) or not (NO-AUT). Participants were randomly assigned to receive one of five informational messages about Robby: (a) No Autism (control condition;  $n=143$ ), (b) No information (NOINFO;  $n=148$ ), (c) Descriptive information only (DINFO;  $n=146$ ), (d) Explanatory information only (EINFO;  $n=166$ ), or (e) a combination of Descriptive and Explanatory information (D+ EINFO;  $n=170$ ). DINFO highlighted similarities between Robby and his potential peers; he was described as a boy with similar characteristics and interests to the students. EINFO explained that Robby had a diagnosis of autism and describe some of the behaviors that students with autism exhibit. D+ EINFO conditions presented both the DINFO and the EINFO messages to the students. NOINFO groups were not provided with any information about Robby's condition or his social and behavioral characteristics. All informational messages were presented subsequent to the video and delivered

by one of four possible sources: (a) a female on a videotape, (b) their teacher, (c) a hypothetical mother (i.e., enacted by a graduate student), and (d) an outside professional (i.e., a “doctor” enacted by the same graduate student portraying the mother). The female shown on the videotape was the same graduate student that performed the role of both “mother” and “doctor.”

A measure of cognitive attitudes (*Adjective Checklist*), a measure of conative attitudes (*Shared Activities Questionnaire*); and a five-item questionnaire (COM) about the persuasiveness of the information source, were used as dependent variables. Analysis of variance, multivariate analysis of variance, and regression techniques were used to analyze the impact of source as well as possible interactive effects between Source and Message and Source and Sex.

No main effect was found for Source on with cognitive or conative attitudes; however, significant interactions were found between Source and other intervention variables (i.e., Message and Sex). Mother as Source was more effective for middle school girls than for middle school boys regardless of the message she delivered. Results also suggested that the “likeability” of Mother mediates her effect on students’ cognitive attitudes. Some practical implications that of these findings is more effective to use a live source, preferably someone who is perceived as “likeable” by the audience, when designing educational interventions for middle school students. Also, if a videotape needs to be used as the source, a combination of descriptive and explanatory information is recommended, and the video should be supplemented with information presented in-vivo by another source. Further, a combination of descriptive and explanatory information should be used when Doctor is source, in order to encourage typical students to participate in recreational activities with SWA. Lastly, the results do not encourage using classroom teachers for this population of students.

The results of this study serve as a good foundation for future research regarding variables that impact educational interventions for typical peers regarding SWA. The limitations of the study (analogue design, homogenous sample, measures used) should be taken into consideration when interpreting results. Future research should consider using observable measures of behavior in support the students' self-report of attitudes, and to use a more diversified sample of students. Overall, students with autism will continue to be educated with typical peers; therefore it is critical that professionals continue to research practices that facilitate the successful inclusion of these students.

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APPENDIX A  
DEMOGRAPHIC QUESTIONNAIRE  
KNOWLEDGE OF AUTISM QUESTIONNAIRE

## DSF



**Grade:** \_\_\_\_\_ **Age:** \_\_\_\_\_ **Birthdate:** \_\_\_\_\_

**Teacher:** \_\_\_\_\_ **Circle One:** **Male** **Female**

**Race/Ethnicity (Check one):** Caucasian \_\_\_\_\_ African-American \_\_\_\_\_  
 Hispanic/Latino \_\_\_\_\_ Asian-American \_\_\_\_\_  
 Other (Write in the space) \_\_\_\_\_

**Have you ever heard of autism? (Circle one):** **Yes** **No**

If yes, what is autism? Write your answer below:

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---



---



---

### What is Autism?

We would like to know what you know about autism. Please answer the following questions using true or false. If you believe the statement is true, please circle **T**. If you believe the statement is false, please circle **F**. Even if you are not sure of the answer, please answer all the questions as best as you can.

- T F 1. If someone has autism, it only lasts for about a week.
- T F 2. Students with autism often have a difficult time looking at other people.
- T F 3. Autism does not affect a person's brain.
- T F 4. Students with autism cannot do normal activities that other people can do, even with help from another person.
- T F 5. Students with autism sometimes repeat what is said to them.
- T F 6. Students with autism sometimes rock back and forth and wave their hands around.
- T F 7. Some students with autism might have trouble talking or expressing themselves.
- T F 8. Students with autism do not have difficulty changing activities and can easily move from one activity to another.
- T F 9. Sometimes students with autism need extra help to learn how to read and write.
- T F 10. You can catch autism by spending time with someone who has it, like you can catch a cold.



APPENDIX B  
ADJECTIVE CHECKLIST

**ACL**

If you had to describe Robby to your classmates, what kinds of words would you use? Below is a list of words to help you. CIRCLE the words you would use. You can use as many or as few as you want. Here is the list:

- |              |              |             |
|--------------|--------------|-------------|
| 1. smart     | 12. dumb     | 23. greedy  |
| 2. weak      | 13. slow     | 24. bright  |
| 3. dirty     | 14. friendly | 25. honest  |
| 4. helpful   | 15. healthy  | 26. selfish |
| 5. sad       | 16. kind     | 27. stupid  |
| 6. lazy      | 17. alert    | 28. nice    |
| 7. happy     | 18. careless | 29. ugly    |
| 8. lonely    | 19. cheerful | 30. neat    |
| 9. sloppy    | 20. foolish  | 31. careful |
| 10. ashamed  | 21. clever   | 32. unhappy |
| 11. handsome | 22. glad     |             |

APPENDIX C  
SOCIAL ACTIVITIES QUESTIONNAIRE

## SAQ

**If Robby moves to your school and is in your class, here is a list of things that you might do with him. Circle the answer that shows how you feel about doing each of these things with Robby.**

1. Ask Robby to come to my house to watch TV.



**No,  
Definitely Not**



**Probably Not**



**Maybe**



**Probably**



**Yes,  
Definitely**

2. Sit next to Robby in class.



**No,  
Definitely Not**



**Probably Not**



**Maybe**



**Probably**



**Yes,  
Definitely**

3. Work in the school library with Robby.



**No,  
Definitely Not**



**Probably Not**



**Maybe**



**Probably**



**Yes,  
Definitely**

4. Share my games or books with Robby.



**No,  
Definitely Not**



**Probably Not**



**Maybe**

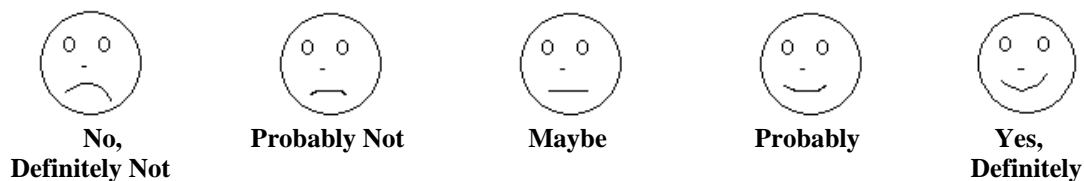


**Probably**

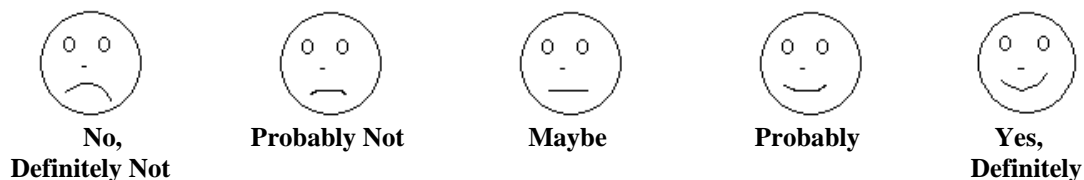


**Yes,  
Definitely**

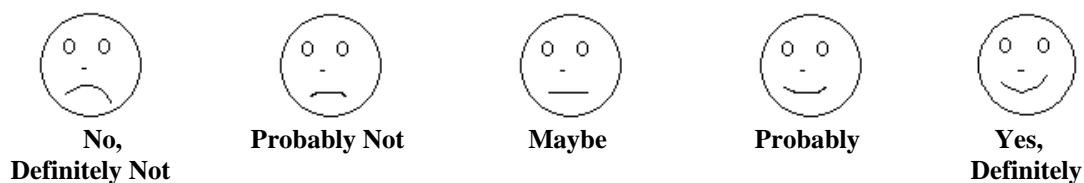
5. Work on a science project at school with Robby.



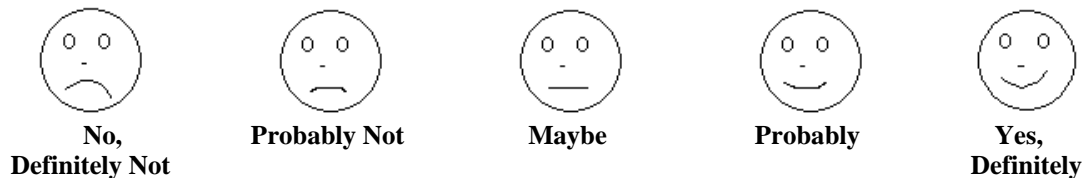
6. Be in the same reading group with Robby.



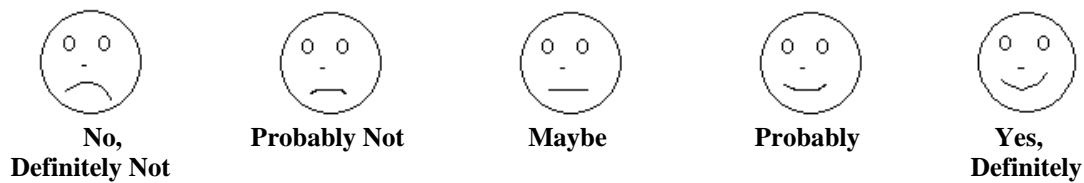
7. Study for a test with Robby at school.



8. Invite Robby to my birthday party.



9. Ask Robby to go to an amusement park with me, like Six Flags.



10. Go out to dinner with Robby and his family.



**No,  
Definitely Not**



**Probably Not**



**Maybe**



**Probably**



**Yes,  
Definitely**

11. Eat lunch next to Robby at school.



**No,  
Definitely Not**



**Probably Not**



**Maybe**



**Probably**



**Yes,  
Definitely**

12. Walk together with Robby in the hall at school.



**No,  
Definitely Not**



**Probably Not**



**Maybe**



**Probably**



**Yes,  
Definitely**

13. Do art with Robby in class.



**No,  
Definitely Not**



**Probably Not**



**Maybe**



**Probably**



**Yes,  
Definitely**

14. Go shopping at a store with Robby.



**No,  
Definitely Not**



**Probably Not**



**Maybe**



**Probably**



**Yes,  
Definitely**

15. Work math problems in class with Robby.



**No,  
Definitely Not**



**Probably Not**



**Maybe**



**Probably**



**Yes,  
Definitely**

16. Write a story or report for school with Robby.



**No,  
Definitely Not**



**Probably Not**



**Maybe**



**Probably**



**Yes,  
Definitely**

17. Ask Robby to join my group of friends.



**No,  
Definitely Not**



**Probably Not**



**Maybe**



**Probably**



**Yes,  
Definitely**

18. Do homework with Robby at home after school.



**No,  
Definitely Not**



**Probably Not**



**Maybe**



**Probably**



**Yes,  
Definitely**

19. Go to the movies with Robby.



**No,  
Definitely Not**



**Probably Not**



**Maybe**

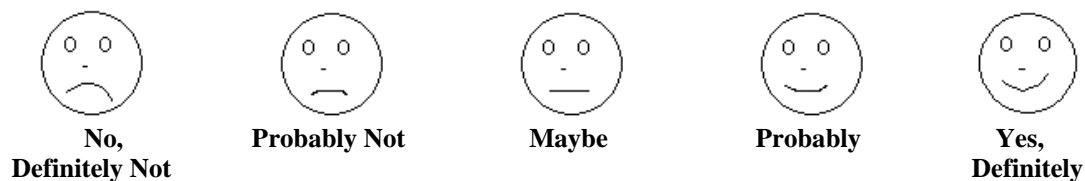


**Probably**

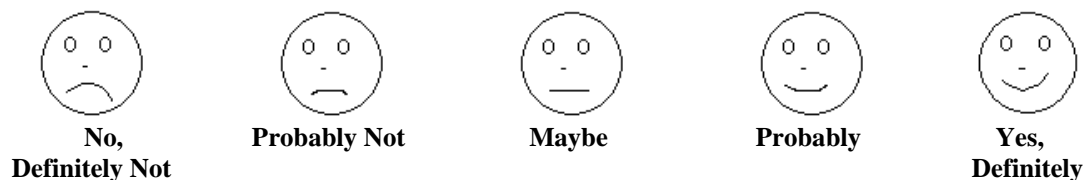


**Yes,  
Definitely**

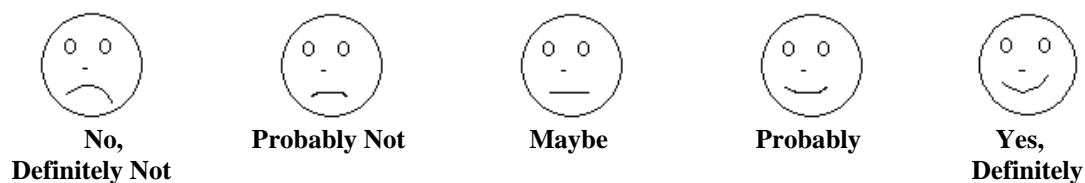
20. Play with Robby outside at school.



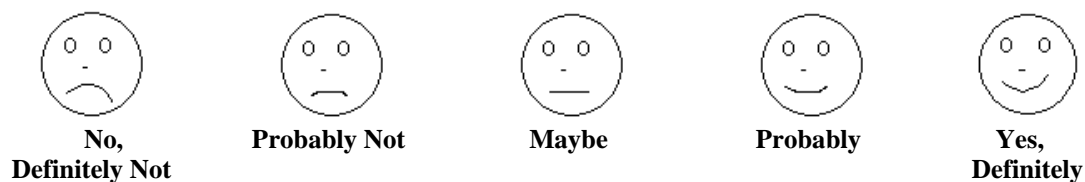
21. Pick Robby as my partner in a game with other kids.



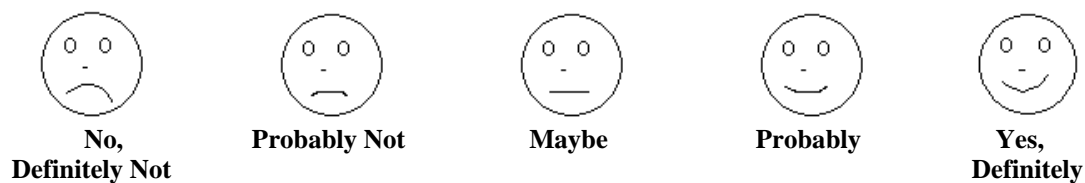
22. Be good friends with Robby.



23. Go to a ball game with Robby.



24. Go to McDonald's with Robby.





APPENDIX D  
SIMILARITY RATING FORM

**SRF (CIRCLE the number)**

1. How much is Robby **like other kids in your class?**

1	2	3	4
Very different	Sort of different	Sort of the same	Very much the same
2. How much is Robby **like you?**

1	2	3	4
Very different	Sort of different	Sort of the same	Very much the same
3. How much are Robby's **interests like yours?**

1	2	3	4
Very different	Sort of different	Sort of the same	Very much the same
4. How much is Robby **different from you?**

1	2	3	4
Very different	Sort of different	Sort of the same	Very much the same

APPENDIX E

PERCEIVED RESPONSIBILITY QUESTIONNAIRE

**PRO: How TRUE or FALSE are the following sentences? (CIRCLE the number.)**

- |    |  |              |             |           |
|----|--|--------------|-------------|-----------|
| 1. | Robby is acting this way <b><u>on purpose</u></b> .            |              |             |           |
|    | 1  | 2            | 3           | 4         |
|    | Very false   | Mostly False | Mostly True | Very true |
| 2. | Robby <b><u>can control</u></b> what he is doing.              |              |             |           |
|    | 1  | 2            | 3           | 4         |
|    | Very false   | Mostly False | Mostly True | Very true |
| 3. | Robby <b><u>can't help</u></b> the way he is acting.           |              |             |           |
|    | 1  | 2            | 3           | 4         |
|    | Very false   | Mostly False | Mostly True | Very true |
| 4. | It's <b><u>Robby's fault</u></b> that he acts the way he does. |              |             |           |
|    | 1  | 2            | 3           | 4         |
|    | Very false   | Mostly False | Mostly True | Very true |

APPENDIX F  
SOURCE PERSUASIVENESS MEASURE

**COM: How TRUE or FALSE are the following sentences? (CIRCLE the number.)**

1. **Robby's mother** seemed to know a lot about new students.  

1	2	3	4
Very false	Mostly false	Mostly True	Very true
  
2. I trust what **Robby's mother** said.  

1	2	3	4
Very false	Mostly false	Mostly True	Very true
  
3. I liked **Robby's mother**.  

1	2	3	4
Very false	Mostly false	Mostly True	Very true
  
4. **Robby's mother** seemed to be an expert on autism.  

1	2	3	4
Very false	Mostly false	Mostly True	Very true
  
5. **Robby's mother** and I are similar.  

1	2	3	4
Very false	Mostly false	Mostly True	Very true