PARTICIPATION IN TRANSITION PLANNING AMONG HIGH SCHOOL STUDENTS WITH AUTISM SPECTRUM DISORDERS

By

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CHAPTER I

INTRODUCTION

Reflecting an emphasis on post-school outcomes for students with disabilities, policymakers amended the Individuals with Disabilities Education Act (IDEA) in 1990. One significant change was to require that services be provided to facilitate the transition from school to adult life. These *transition services* were defined as follows:

> A coordinated set of activities for a student, designed within an outcome-oriented process, which promotes movement from school to postschool activities . . . [and] shall be *based upon the individual student's needs, taking into account the student's preferences and interests* [emphasis added]. (IDEA, 1990)

Thus, the 1990 amendments set the initial expectation that students would provide their perspectives, so that their preferences and interests would be taken into account during the development of transition services (Wehmeyer & Sands, 1998).

Subsequent reauthorizations of IDEA have further emphasized the role of student input in transition planning (Grigal, Test, Beattie, & Wood, 1997; Martin, Marshall, & Sale, 2004). Thus, students must be invited to attend meetings in which postsecondary transition goals are discussed. If students do not attend, the individualized education program (IEP) team is still required to consider the student's preferences and interests in the development of transition services. Ultimately, the progressive emphasis on student attendance reflects a desire to include the student voice in planning for life after high school. Educators and researchers in the field of special education have also recognized participation in transition planning as an authentic way for students to learn and practice self-determination skills (e.g., self-advocacy, goal-setting; Test et al., 2004).

Student Participation in Transition Planning

In recent years, attendance at IEP and transition planning meetings has increased among students with disabilities. For example, Trach and Shelden (2000) analyzed the IEPs of two groups of students in their final years of high school: 531 students from 1991-93, and 253 from 1996-98. In the first group, 53% of students attended their IEP meetings; in the second group, attendance rose to 64%. Documenting the continuation of this positive trend, a study of 393 IEP meetings for students in middle and high school reported a 70% attendance rate (Martin et al., 2004). Thus, research suggests an increase in attendance at IEP and transition planning meetings among students with disabilities.

Though students may be attending these meetings more, they are not necessarily active participants. Martin et al. (2006) observed 109 middle and high school IEP meetings and surveyed IEP team members about this process. In rating how much they thought the student participated in the meeting (not at all, a little, some, a lot), 40.6% of special education teachers reported that students participated a lot. This finding, however, contrasts sharply with the observational results of the same study: students spoke in their IEP meetings only 3% of the time. Though no research has directly addressed this discrepancy, the authors suggested that teachers may have equated student attendance with student participation.

Other research also documents the frequent occurrence of students attending, but not otherwise participating in IEP and transition planning meetings. In a national survey of 523 educators involved in IEP meetings, 46% of respondents indicated that students attended their IEP meeting, but otherwise did not participate (Mason, Field, & Sawilowsky, 2004). Likewise, teacher reports from the National Longitudinal Transition

Study-2 (NLTS2) revealed that 24.6% of students were present at meetings, but participated little (Cameto, Levine, & Wagner, 2004). Thus, both studies document a substantial portion of students who attend meetings, but do not actively participate.

Thus, in the same way that placement in a general education classroom does not ensure inclusion of students with disabilities, student attendance does not ensure participation in IEP and transition planning meetings. And, though inviting students to attend transition planning meetings complies with the IDEA transition mandates, the spirit of these mandates was to encourage students to actively participate and have a voice in planning for their lives after high school (deFur, 2003).

Unfortunately, students may not participate in IEP and transition planning meetings for a variety of reasons. They may not participate because teachers and parents do not communicate this expectation or provide the opportunities and supports needed (deFur, 2003; Martin et al., 2006). Additionally, students may encounter barriers related to access and logistics. Further, students may not be motivated to participate because of prior negative experiences or because it is not meaningful to them (Morningstar, Turnbull, & Turnbull, 1995). Interviews of 29 high school students with disabilities revealed an array of negative attitudes toward the transition planning process: "confusion, ambivalence, distaste, or a lack of interest" (Lovitt, Cushing, & Stump, 1994, p. 36).

Beyond opportunity and motivation, many students also need instruction in certain skills to participate meaningfully in transition planning. They need to be taught information specific to the process, such as unfamiliar terms and concepts. They also need to learn effective communication skills to express their preferences and strengths within the transition planning context. Just as many students with disabilities need

instruction and practice in new skills, they may also need instruction and practice in these self-determination skills (Martin et al., 2006; Test, Fowler, Brewer, & Wood, 2005).

Various interventions have been developed to promote student participation in transition planning. A recent review identified 17 intervention studies, several of which reported medium and large effect sizes (Griffin, 2011). This literature has shown that interventions can successfully teach students with disabilities the needed skills to participate actively in their own transition planning process. Thus, we know that students with disabilities are capable of participating in the IEP and transition planning process; however, we also know that not all students do so.

Predictors of Student Attendance and Participation

Using two national datasets, Wagner, Newman, Cameto, Javitz, and Valdes (2012) conducted regressions to investigate differences in student participation in IEP and transition planning meetings. Compared to students with learning disabilities (LD), students with autism spectrum disorders (ASD) were less likely to attend meetings. Also, both students with ASD and students with speech/language impairments were less likely to actively participate. Beyond disability type, higher functional cognitive skills and social skills were positively related to greater participation.

Wagner et al. (2012) also identified various other characteristics related to participation in transition planning. With regard to demographics, Caucasian students were more likely to take an active role in transition planning, compared to African American and Hispanic students. Additionally, older students were more likely to attend transition planning meetings and participate actively. Finally, students from families with

a higher annual income (> $50,000) were less likely to actively participate in transition planning, compared to students from families with a lower annual income (< $25,000).

Various aspects of parent involvement and expectations were also related to student participation in transition planning (Wagner et al., 2012). Students whose parents were actively involved with their education at home were more likely to attend their transition planning meetings and to take an active role in transition planning. Similarly, students whose parents were actively involved at their school were also more likely to take an active role in transition planning. Students whose parents attended their transition planning meetings were also more likely to attend these meetings themselves. Finally, students whose parents had high expectations for them to pursue postsecondary education were more likely to attend and participate in transition planning meetings.

Finally, two school-related characteristics were associated with differential participation in transition planning (Wagner et al., 2012). First, students who spent more time in general education settings were more likely to attend transition planning meetings and to participate actively. Second, students who received instruction specifically focused on transition planning were also more likely to attend and participate actively. Thus, Wagner and colleagues have provided a global overview of the characteristics that relate to greater involvement in transition planning among students with disabilities overall.

Students with ASD in the Transition to Adulthood

As noted previously, students with ASD are among the least likely to attend and participate in transition planning meetings. Shogren and Plotner (2012) have also drawn attention to the unique challenges faced by students with ASD and their families in the

transition planning process. Beyond school-based transition planning, the experiences of young adults with ASD and their families have been the focus of recent research and attention. This is due in part to a rapid increase in the number of children diagnosed with ASD in the early 1990s; two decades later, this generation of individuals with ASD is transitioning out of high school and into adulthood (Taylor, 2009).

Various studies have documented dismal employment outcomes among adults with ASD (Eaves & Ho, 2008; Howlin, Goode, Hutton, & Rutter, 2004). Recent findings from a nationally representative sample revealed that students with ASD in the United States are in fact faring worse than youth with other disabilities. Compared to youth with speech/language impairments, intellectual disability, or LD, youth with ASD are employed at the lowest rates and are the most likely to have no engagement in education or employment activities (Shattuck et al., 2012). This study found that over half of youth with ASD are not engaged in employment or pursuing education after high school. Unfortunately, many young adults with ASD spend their days after high school in segregated settings, such as sheltered workshops or day centers.

Alongside these low rates of engagement in inclusive employment and educational settings, youth with ASD also experience high rates of service disengagement after high school (Shattuck, Wagner, Narendorf, Sterzing, & Hensley, 2011). Thus, after leaving the supports and services provided in high school, youth with ASD and their families are left to fend for themselves. This transition—from the services provided under IDEA to receiving little in the adult service system—has far-reaching consequences. Taylor and Seltzer (2011a) found that, whereas youth with ASD experienced improvements in autism symptoms and maladaptive behaviors during high school, this

improvement slowed after exit. Mirroring this trajectory, improvements in the mother-child relationship during high school were found to slow or stop after students with ASD exited high school (Taylor & Seltzer, 2011b). This decline in the improvement of behavior among youth with ASD and concurrent decline in the mother-child relationship might be attributed in part to the unmet service needs of these youth and their families.

Taken together, these findings reveal that adolescents with ASD and their families face unique challenges in the transition from high school to adult life in the community. Though some of these challenges obviously relate to larger issues around the adult service system, a closer examination of the transition planning process for youth with ASD is also warranted (Shattuck et al., 2012). Shogren and Plotner (2012) have begun this work by identifying areas in which the transition planning process for students with ASD differs from that experienced by students with other disabilities.

The Current Study

Though many aspects of transition planning might be the focus of further research, the current study focuses on the characteristics that related to participation in transition planning among students with ASD. This investigation is needed because students with ASD are the least likely to attend their transition planning meetings, and the least likely to take an active role in the transition planning process (Wagner et al., 2012). Yet, the current literature provides little evidence regarding the effectiveness of interventions to promote participation in transition planning among students with ASD. Currently, only 5 students with ASD have participated in intervention studies to promote student participation in IEP or transition planning (Griffin, 2011).

Because of the need to improve participation in transition planning among students with ASD, and because little evidence of the efficacy of current interventions is available, the current study is needed to characterize the factors related to differing levels of participation in transition planning among students with ASD. Specifically, the principal research question of this study is: Which characteristics independently predict greater participation in transition planning among students with ASD? To investigate this question, I analyzed relevant questions included in the NLTS2 dataset.

Hypothesized Predictors of Participation in Transition Planning

Many variables potentially relate to level of student participation in transition planning. These include demographics related to the students' family and school; characteristics specific to individual students; variables related to students' school experiences; and variables related to parental involvement.

Demographic characteristics. Various demographic characteristics are hypothesized to relate to level of student participation in transition planning. These include gender, age, ethnicity, and main language; household income; parent education level; and the surrounding community and socioeconomic status (SES) of schools.

Gender. In a study of self-determination among youth with disabilities, female participants were at risk for lower levels of self-determination, compared with male participants (Wehmeyer & Lawrence, 1995). However, in the recent study of student participation in transition planning, gender was not significantly related participation (Wagner et al., 2012). Given these mixed findings, I hypothesize that female students will participate at lower levels than male students, but that overall the difference will be small.

Age. As previously noted, Wagner et al. (2012) found that older students with disabilities were more likely to attend and actively participate in transition planning. I hypothesize that the same will hold true for students with ASD: compared with younger students, older students will be more likely to attend and actively participate.

Ethnicity. Wagner et al. (2012) found that ethnicity was unrelated to student attendance. However, compared to Caucasian students, African American and Hispanic students were less likely to actively participate in transition planning. Thus, I hypothesize that attendance will not relate to ethnicity among students with ASD, but that African American and Hispanic students will participate at lower rates than Caucasian students.

Language at home. Students whose primary language is not English may struggle with listening comprehension and verbal communication (Watts-Taffe & Truscott, 2000). More formal, cognitively challenging settings may pose additional challenges to students who speak English as a second language. Compared to informal conversations, these settings are more likely to lack contextual cues that facilitate understanding (e.g., gestures). Therefore, I hypothesize that students who primarily speak English will attend and participate in transition planning meetings at higher rates than students who do not.

Parent education and income. Prior research has found parent education to be an influential variable related to student achievement (e.g., Davis-Kean, 2005). More specifically, maternal education level has been found to correlate positively with child educational attainment (Magnuson, 2007). Thus, I hypothesize that maternal education level will positively relate to student attendance and participation in transition planning. Conversely, prior research upholds a different hypothesis regarding household income, though this variable is often considered to be related to level of parent education (e.g.,

Carlson, Uppal, & Prosser, 2000). Compared to students from families with a lower annual income (< $25,000), students from families with a higher income (> $50,000) participate less in transition planning (Wagner et al., 2012). Therefore, I hypothesize that students with ASD from higher-income families will participate at lower rates. However, because the hypotheses regarding parent education and income level seem to be at odds, and because the strength of relationships between these variables and the outcome variable is unclear, it is also unclear which hypothesis will be confirmed.

Surrounding community. Baer et al. (2003) found that students with disabilities in rural areas were more likely to attain full-time employment after graduation, and that students from suburban areas were more likely to pursue postsecondary education. Yet, Rabren, Dunn, and Chambers (2002) found that students with disabilities from urban areas were more likely to be employed a year after high school than students from other areas. Because differences in student outcomes have been related to the surrounding community, it is plausible that in-school differences might also differ; however, findings have been mixed. Thus, I simply hypothesize that differences in students' surrounding community will relate to differences in transition planning.

School SES. As noted by Hughes and Avoke (2010), high-poverty schools are typically found in areas with low property tax revenues, and often operate without adequate funding and staffing. Thus, students from high-poverty schools generally fare worse than students from schools that are better equipped. Therefore, I hypothesize that students from high-poverty schools will be less likely to attend and participate actively in their transition planning meetings, compared to students from higher-SES schools.

Student characteristics. Beyond demographics, various other student characteristics may relate to a student's level of participation in transition planning. These individual student characteristics include severity of disability; communication skills; social skills; and abilities related to classroom participation and self-advocacy.

Severity of disability. Several NLTS2 items might be considered a proxy for severity of disability, including whether the student has ID, and a series of questions regarding functional cognitive skills. Wagner et al. (2012) found that greater functional cognitive skills positively related to both student attendance and greater student participation in transition planning meetings. Similarly, I hypothesize that higher functional cognitive skills will be positively associated with greater attendance and participation in transition planning among students with ASD. Likewise, I hypothesize that students with ASD who have ID will be less likely to attend and participate actively in their transition planning meetings, compared with students who do not have ID.

Communication skills. Particularly when considering a student's ability to participate in transition planning, the importance of communication skills cannot be overestimated (Wagner et al., 2003). The importance of a student's communication skills relate to his or her ability to understand what is being said during the meeting (receptive communication), as well as his or her ability to describe personal strengths, needs, goals, and preferences (expressive communication). Though the topic of communication skills in individuals with ASD warrants extensive study and discussion, for the purposes of this study, it is sufficient to note that deficits in communication are a hallmark of ASD (Tager-Flusberg, Paul, & Lord, 2005). Therefore, I hypothesize that both receptive and expressive communication will positively relate to student attendance and participation.

Social skills. Wagner et al. (2012) found that greater social skills among students with disabilities positively related to greater student participation in transition planning. This variable is particularly relevant among students with ASD, a diagnosis characterized by social skills impairment (Volkmar & Klin, 2005). I hypothesize that student social skills will relate positively to attendance and participation among students with ASD.

Classroom participation. A student's engagement in classroom activities might relate to level of participation in transition planning meetings. Classroom participation encompasses a wide variety of behaviors, such as engaging in discussions; completing homework; staying focused on coursework; and participating in class activities (Carter, Austin, & Trainor, 2012; Wagner et al., 2003). Though these behaviors are not directly related to participation in transition planning, similar skills are involved. For example, participating in a class discussion is similar to participating in the discussion at a transition planning meeting. Thus, I hypothesize that classroom engagement will positively relate to participation in transition planning among students with ASD.

Self-advocacy skills. Initial analyses conducted by Cameto et al. (2004) considered an item regarding students' ability to ask for what they need in school to be a proxy for self-advocacy skills. Findings revealed that students with disabilities who were better able to ask for what they needed were more active in transition planning than their peers who were less able to do so. This is not surprising, given that this item involves both understanding personal limitations and communicating needs—two skills that would help students participate effectively in transition planning meetings. Therefore, I hypothesize that self-advocacy skills will strongly relate to attendance and participation in transition planning among students with ASD.

Educational experiences. Various aspects of students' educational experiences hypothetically relate to level of student participation in transition planning: level of inclusion in general education settings, history of suspension/expulsion, relationships with teachers, and whether transition planning instruction was provided.

Percent instruction in general education setting. Wagner et al. (2012) found that the percentage of time spent in general education settings positively related both to attendance and participation in transition planning meetings among students with disabilities overall. Since greater inclusion in general education settings likely relates both to a students' functional abilities and to the perceptions of that student held by teachers and parents, this finding is not surprising. Therefore, I hypothesize that the percentage of time students with ASD spend in general education settings will also positively relate to their attendance and participation in transition planning meetings.

History of suspension or expulsion. Though a history of suspension or expulsion has not been linked with level of student participation in transition planning, this variable has been related to parent satisfaction with their involvement in IEP and transition planning meetings (Wagner et al., 2012). This variable might be considered a proxy for problem behaviors more severe than those identified by items in social skills ratings. Therefore, I hypothesize that students who have ever been suspended or expelled (versus those who have not) will attend and participate in transition planning at lower rates.

Relationship with teachers. Though no research documents the impact of the student-teacher relationship on level of student participation in transition planning, this variable is hypothetically important. The type of relationship a student has with teachers at school would likely impact the student's willingness to participate in an optional

meeting with teachers, such as a transition planning meeting. Therefore, I hypothesize that students with more positive relationships with teachers will attend and participate in transition planning at higher rates than students who have less positive relationships.

Instruction in transition planning. Wagner et al. (2012) found that students who had received instruction in transition planning were more likely to attend and participate in transition planning meetings. Likewise, I hypothesize that students with ASD who received instruction in transition planning will also attend and participate at higher rates than students who did not have the benefit of such instruction.

Parent expectations and involvement. Various aspects of parent involvement are also hypothetically related to level of participation in transition planning among students with ASD. These include parents' expectations of their child's participation in postsecondary education; parent involvement at school; parent attendance at transition planning meetings; and how frequently an adult in the household discussed post-school plans with the student.

Expectations of postsecondary education. Wagner et al. (2012) found that higher parent expectations for their children to participate in postsecondary education positively related to student attendance and participation in transition planning. Therefore, I hypothesize that higher expectations among parents of students with ASD will also positively relate to student attendance and participation in transition planning meetings.

Parent involvement in school events and transition planning. Wagner et al. (2012) found that parent involvement at school events was positively related to participation in transition planning among students with disabilities. Likewise, parent attendance at IEP or transition planning meetings was positively related to student

attendance (Wagner et al.). Based on these findings, I hypothesize that parent involvement in school events and transition planning meetings will positively relate to attendance and participation in transition planning meetings among students with ASD.

Discussion of transition at home. Similarly, Wagner et al. (2012) found that greater parent involvement at home was positively related to student participation in transition planning. One item in their home involvement scale specifically related to how often an adult in the household discussed plans after high school with the student. Thus, I hypothesize that greater frequency of such discussions with parents will positively relate to attendance and participation in transition planning among students with ASD.

Nature of the Outcome Variable

In addition to the hypotheses stated for each predictor variable, an overarching hypothesis guided my analyses. This hypothesis relates to the nature of the outcome variable (a variable included in NLTS2 in which teachers rated student participation in transition planning, thus: 1 = student did not attend, 2 = student attended but participated little, 3 = student was a moderate participant, and 4 = student took a leadership role). In a preliminary report on this topic, Cameto et al. (2004) considered these ratings to be a single ordinal scale. More recently, Wagner et al. (2012) took a different approach, considering the issue of student attendance (versus absence) to be separate from level of student participation. That is, they conducted two separate regressions, one to identify predictors of attendance among students with disabilities, and a second to identify predictors of active participation. I hypothesize that the approach employed by Wagner et al. better reflects the nature of the outcome variable.

CHAPTER II

METHOD

This chapter addresses four aspects of the current study. First, it provides an overview of the NLTS2 study design, sampling procedures, and measures. Second, it explains the method for selecting the sample for this study and describes the participant characteristics. Third, it details the specific predictor and outcome variables. Finally, it outlines the descriptive, comparative, and regression analyses performed.

NLTS2 Methods

Study Design and Sampling Procedures

NLTS2 is a nationally-representative, longitudinal study of the experiences of over 11,000 youth receiving special education services as they transition from high school to adulthood (Newman et al., 2009). Using multiple instruments, data were collected from youth, parents, teachers, and school staff. Data collection occurred in five waves over the course of 10 years (2000-2010).

To generate a nationally representative sample, participants were selected in two stages (Newman et al., 2009). First, the sample of school districts was stratified based on geographic region, district size, and community wealth (proportion of students living below poverty level). From this set of approximately 12,000 school districts, a stratified random sample was selected. In addition to these districts, 77 state-supported special

schools were invited to participate in the study. In all, 501 school districts and 38 special schools were recruited. Second, these schools provided rosters of students receiving special education services. This group was stratified by primary disability category, and a random sample was selected from each of the federally designated disability categories.

Measures

The current study linked data from five sources: *Parent Interview*, *School Characteristics Survey, School Program Survey*, *Teacher Survey*, and *Transcript Data* (see Table 1).

Parent Interview. The *Parent Interview* was conducted over telephone in one of two ways. Either parents were contacted via their home telephone, or (if parents did not have a reliable telephone number) a toll-free number was made available so that they could call in for the interview. The interviews were conducted with computer-assisted telephone interviewing technology. Parents who could not be reached by telephone were mailed questionnaires (Cameto et al., 2004).

The *Parent Interview* includes items regarding demographic information about both the student (e.g., gender, ethnicity, disability, age) and family (e.g., language spoken at home, SES). The *Parent Interview* also asks about the student's abilities (e.g., how well the youth communicates), and school experiences (e.g., how well youth gets along with teachers). Overall, the response rate for the *Parent Interview* was 61.1% (Javitz & Wagner, 2005).

Table 1

NLTS2 Data Collection Instruments

Instrument	Respondent	Content of questions	Response rate
Parent Interview	parent/guardian	demographics; student's abilities; experiences at school and home	61.1%
School Characteristics Survey	staff member able to report on school characteristics, policies	demographics about the school and its surrounding community	53.5%
School Program Survey	staff member most knowledgeable about the student	information about the student's school program (e.g., special and vocational education classes; transition planning)	48.1%
Teacher Survey	teacher of the student's first general education class of the week (if applicable)	information about the student's experiences and participation in general education classes	36.3%
Transcript Data	staff member with access to transcripts	student grade level; instructional setting of courses; course content	84.3%

School Characteristics Survey. The *School Characteristics Survey* was mailed in a packet to the school staff member who had agreed to distribute NLTS2 surveys. These coordinators signed participation agreements, and received reimbursement for their assistance, depending on the number of NLTS2 participants enrolled in their school.

The *School Characteristics Survey* was completed by a school staff member able to report on school characteristics and policies. Often principals, these respondents were surveyed to characterize the schools attended by students participating in the NLTS2. The *School Characteristics Survey* included questions about the school's surrounding community (e.g., rural, suburban, urban), as well as the school's demographics (e.g., percent of students receiving free or reduced-priced lunch). The response rate for the *School Characteristics Survey* was 53.5% (Javitz & Wagner, 2005).

School Program Survey. One school staff member, identified as the person most knowledgeable about a student participating in NLTS2, completed the *School Program Survey* (Cameto et al., 2004). The respondents were often special education teachers. Their answers provide information about the student's school program, including information about the student's special education and vocational classes. The *School Program Survey* also includes questions about whether transition planning occurred for the student, whether the student received instruction related to transition planning, and both students' and parents' participation in transition planning. Like the *School Characteristics Survey,* the *School Program Survey* was mailed in a packet to the school staff member who had agreed to distribute NLTS2 surveys. The response rate for the *School Program Survey* was 48.1% (Javitz & Wagner, 2005).

Teacher Survey. Additional data were collected on the experiences of students participating in NLTS2 who were enrolled in at least one general education academic class. The teacher of the student's first general education class of the week was selected as the respondent to the *Teacher Survey.* This survey collected data on that class, including instructional practices used, and the student's experiences in that class. Several of these items replicated questions in the *School Program Survey* about student experiences in special education and vocational classes. Like the *School Characteristics Survey* and *School Program Survey,* the *Teacher Survey* was mailed in a packet to the school staff member who had agreed to distribute NLTS2 surveys. The response rate for the *Teacher Survey* was 36.3% (Javitz & Wagner, 2005).

Transcript Data. Students' most recent transcripts were requested of participating schools from 2002-2009. In addition, a cover letter requested that the registrar or other school staff member indicate the following, if not indicated on the transcript: student's enrollment or exit status, grade level, course content, instructional setting of courses (e.g., special education), and absentee information. The response rate for the *Transcript Data* was 84.3% (Wagner et al., 2012).

The Current Study: Participant Selection and Characteristics

Sample Selection

Sample selection focused on students with ASD for whom information on their participation in transition planning was available. Data on student participation in transition planning were collected in the *School Program Survey*, which was

administered at Waves 1 and 2. Wave 2 was selected for the focus of this study because data on participation in transition planning were available for most youth with ASD. Wave 2 of the *School Program Survey* includes data for 560 students with ASD. Of these 560 potential participants, data on role in transition planning are available for 480 youth with ASD. The 80 individuals with ASD lacking data for this variable were excluded in this first phase of sample selection.

The second and third phases of sample selection related to whether data were available for two key predictors: (a) whether the student had received instruction related to transition planning at school, and (b) how often the student talked with a parent about their plans after high school. These items are theoretically important in that they relate to experiences students might have at school or at home that prepare them to participate in discussions about their transition out of high school.

In the second phase of sample selection, 30 individuals were excluded from analyses because they were missing data for the variable on instruction in transition planning. In the third phase of sample selection, 130 individuals were excluded from analyses because they were missing data on how often the student talked with a parent about their plans after high school. The final sample consisted of 320 students with ASD. For each of these participants, data were available on (a) the student's role in transition planning; (b) whether students had received instruction in transition planning; and (c) how often students and their parents discussed their plans for life after high school (see Figure 1).

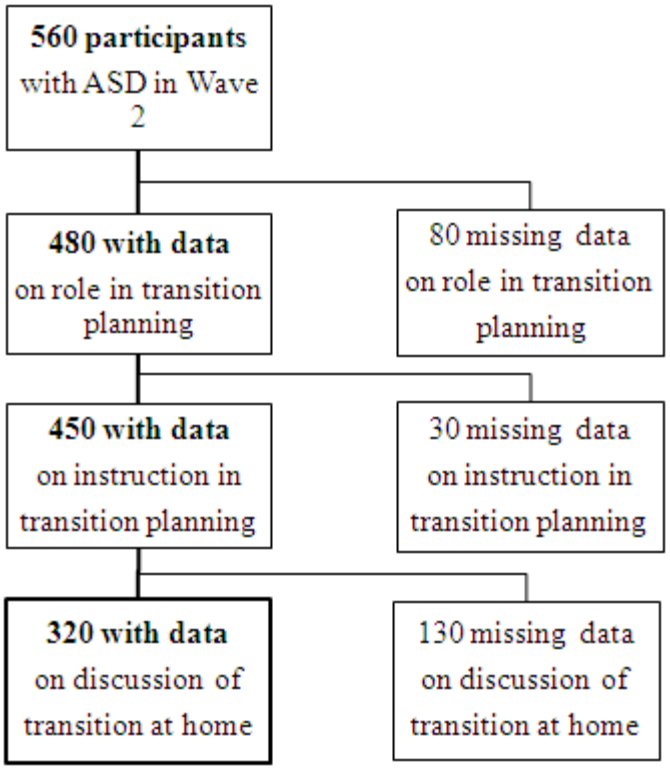

Figure 1. Participant Selection Flow

Participants

The final sample included 320 high school students with ASD. See Table 2 for demographic characteristics of participants. Following instructions from Institute of Education Sciences, these and all reported numbers have been rounded to the nearest 10. Therefore, reported numbers in tables may not always sum to the sample size reported here; likewise, reported numbers may not always correspond exactly with reported percentages.

Table 2

Demographic Characteristics of Participants

Characteristic	% (*n*)	Characteristic	% (*n*)
Student gender		Student has ID	
Male	84.2% (270)	No	90.2% (290)
Female	15.8% (50)	Yes	9.8% (30)
Student age		Household income	
16	20.6% (70)	$25,000 or less	20.3% (60)
17	26.6% (80)	$25,001-50,000	24.4% (80)
18	31.6% (100)	$50,000 or more	51.6 % (160)
19-20	21.2% (70)	Missing	3.8% (10)
Student ethnicity		Parent education level	
Caucasian	66.5% (210)	Less than HS	7.9% (30)
African American	16.8% (50)	HS graduate/GED	19.3% (60)
Hispanic	10.8% (30)	Some college	31.3% (100)
Asian/Pacific Islander	3.8% (10)	BA/BS or higher	37% (120)
Other	2.2% (10)	Missing	4.4% (10)
Main language spoken			
English	82.6% (260)		
Other	12% (40)		
Missing	5.4% (20)		

Note. HS = High School; GED = Certificate of General Educational Development; BA = Bachelor of Arts degree; BS = Bachelor of Science degree

Predictor and Outcome Variables

Predictor Variables

The following section details the specific variables hypothesized to correlate with student participation in transition planning. These include demographics related to the students' family and school, characteristics specific to the individual students, variables related to the students' school experiences, and variables related to parental involvement.

In some cases, responses were reverse-scored. Reverse-scoring was conducted for two reasons. First, reverse-scoring was used if a question is negatively worded and all other questions in a scale are positively worded; in this way, all the items in a scale will be parallel. Second, reverse-scoring was used so that the scoring is consistent across the different variables and scales. If necessary, reverse-scoring was used so that lower scores indicate lower levels and higher scores indicate higher levels of a given variable (e.g. social skills).

Demographic characteristics. Student, family, and school demographics were analyzed in relation to student participation in transition planning. The following demographic characteristics were included in analyses: student gender, age, and ethnicity; the main language spoken at home; household income; parent education level; the school's surrounding community; and the SES of the student's school.

Gender. Student gender was recorded (w2_Gend2) as (1) male or (2) female.

Age. The age of students during Wave 2 data collection was categorized (w2_Age4) as follows: (1) 16 years, (2) 17 years, (3) 18 years, and (4) 19-20 years.

Ethnicity. The ethnicity of participating students was recorded (w2_Eth6) as follows: (1) Caucasian, (2) African American, (3) Hispanic, (4) Asian/Pacific Islander, (5) American Indian/Alaska Native, and (6) Other/multiple. Because the latter four groups were small, they were combined for analysis. Therefore, ethnicity was grouped as (1) Caucasian, (2) African American, and (3) Other.

Main language spoken at home. The main language spoken in a student's home was recorded (*Parent Interview* np1A4b); possible responses included English, as well as 38 other languages. This variable was recoded as (1) English, and (2) Other.

Household income. Household income was categorized into three groups (w2_Incm3): (1) $25,000 and under; (2) $25,001 - $50,000; and (3) Over $50,000.

Parent education level. The education level of a student's parents was recorded (*Parent Interview* np1MotherEd, np1FatherEd). If education level was available for the student's mother, this value was used; if it was not available, the education level of the student's father was used. Possible responses included the following: (1) less than high school, (2) graduated high school/earned Certificate of General Educational Development (GED), (3) some college, and (4) Bachelor of Arts (B.A.) or Bachelor of Science (B.S.) or higher degree. Because the first group was small, it was combined with the second group for analyses: (1) less than high school, high school graduate, or GED; (2) some college; and (3) B.A./B.S. or higher degree.

Surrounding community. The type of community surrounding the student's school was recorded (w2_Urb3) as (1) rural, (2) suburban, or (3) urban.

School SES. The percentage of students eligible for free or reduced-price lunch at the participant's school was considered a proxy for school SES (*School Characteristics*

Survey nsc1B5). Response choices were reverse-scored so that the higher score indicates higher SES for the student body: (1) more than 75% eligible for free or reduced-price lunch to (4) less than 25% of students eligible.

Student characteristics. Individual characteristics and abilities were considered in relation to student participation in transition planning. The first of these student characteristics was whether the student had been designated as having ID. Several other variables also related to the students' abilities in various areas: functional cognitive skills; expressive and receptive communication skills; general social skills; classroom social skills; classroom participation skills; and self-advocacy skills.

Intellectual disability. Participating students were categorized as having ID or not. This variable was created by combining both district designations and parent report (*Parent Interview* HasMR). The student was considered to have ID if either the district or the student's parent designated that the student was diagnosed with ID in either Wave 1 or Wave 2. Possible categories for this variable were (0) no, or (1) yes.

Functional cognitive skills. Parents were asked to rate students' abilities on four tasks (*Parent Interview* np2G3a_a-d): (a) telling time on an analog clock, (b) understanding common signs, (c) counting change, and (d) looking up phone numbers/using a phone. To rate how well students perform each of these skills, response options ranged from (1) not at all well to (4) very well. Similar to prior studies (e.g., Wagner et al., 2012), items were summed to generate a Functional Cognitive Skills score. Consistent with prior studies (e.g., Carter et al., 2012), if data for a single variable was missing, mean imputation was used to generate this value. Possible scores range from 4 ("not at all well" on all items) to 16 ("very well" on all). Cronbach's alpha for this scale

equaled .85. This variable was categorized into the following groups: low (4-8), medium (9-14), and high functional cognitive skills (15-16; Wagner et al. 2003).

Expressive communication. Parents were asked to rate students' ability to communicate clearly (*Parent Interview* np2B5b). This item was reverse-scored so that the higher score indicates greater skill: the student (1) does not communicate at all; (2) has a lot of trouble communicating; (3) has a little trouble communicating; and (4) has no trouble communicating. Because no participants were rated a (1) for this item, the following three categories were used in analyses: (1) has a lot of trouble communicating; (2) has a little trouble communicating; and (3) has no trouble communicating.

Receptive communication. Similarly, parents were asked to rate students' ability to understand others (*Parent Interview* np2B5e). This item was reverse-scored so that the higher score indicates greater skill: the child (1) does not understand at all, (2) has a lot of trouble understanding, (3) has a little trouble understanding, and (4) understands as well as other children. Because few participants were rated a (1) for this item, the following three categories were used in analyses: (1) does not understand or has a lot of trouble, (2) has a little trouble, and (3) understands as well as other children.

General social skills. The *Parent Interview* included 11 questions regarding social skills. Parents were asked how often their child engages in different behaviors (*Parent Interview* np1G1a-np1G1k): (a) joins group activities without being told to, (b) makes friends easily, (c) ends disagreements with parent calmly; (d) seems confident in social situations; (e) gets into situations that are likely to result in trouble, (f) starts conversations rather than waiting for others, (g) receives criticism well, (h) behaves at home in a way that causes problems for the family, (i) controls temper when arguing with

peers other than siblings, (j) keeps working at something until he or she is finished, and (k) speaks in an appropriate tone at home.

For each question, the response choices were (0) never, (1) sometimes, and (2) very often. Scores were reversed for negatively worded items. These 11 items were summed to determine a General Social Skills Scale. If data were missing on up to 3 questions, mean imputation was used to generate these values (Carter et al., 2012). Possible scores range from 0 (never on all items) to 22 (very often on all items). Cronbach's alpha for this scale equaled .69. Scores of 0-10 were considered low, 11-16 were considered medium, and 17-22 were considered high.

Classroom social skills. Teachers were asked how well the student (a) gets along with other students, (b) follows directions, and (c) controls behavior. Response options ranged from (1) not at all well to (4) very well. If a data point for a single variable was missing, mean imputation was used to generate this value (Carter et al., 2012). Then, scores were summed to generate a Classroom Social Skills Scale score.

Teachers were asked to rate social skills in three settings, if applicable: special education classes (*School Program Survey* npr1D18a-c), vocational education classes (*School Program Survey* npr1C4a-c), and general education classes (*Teacher Survey* nts1C1a-c). Cronbach's alpha was .77 for the special education items; .78 for the vocational education items; and .76 for the general education items. Cronbach's alpha for these nine items together was .87. If students had scores in more than one setting, these were averaged together. Possible scores range from 3 (not at all well on all items) to 12 (very well on all). Scores 3-7 were considered low, >7-9 were medium, and >9-12 were high (Carter et al., 2012).

Classroom participation. Teachers were asked to rate how often students (a) engaged in group discussions, (b) completed homework on time, (c) stayed focused on coursework, and (d) withdrew from activities. Response options ranged from (1) rarely to (4) almost always; scores were reversed for the negatively worded question. If a data point for a single variable was missing, mean imputation was used to generate this value (Carter et al., 2012). Scores were summed to generate a Classroom Participation Scale.

Teachers were asked how well students participated across three settings, if applicable: special education classes (*School Program Survey* npr1D19a-d), vocational education classes (*School Program Survey* npr1C5a-d), and general education classes (*Teacher Survey* nts1C6a-d). Cronbach's alpha was .67 for the special education items, .69 for the vocational education items, and .68 for the general education items. Cronbach's alpha for these 12 items together was .83. If students had scores in more than one setting, these were averaged together. Possible scores range from 4 (lowest engagement for each item) to 16 (highest engagement for each). Scores 4-9 were considered low, >9-13 were medium, and >13-16 were high (Carter et al., 2012).

Self-advocacy. Teachers rated how well students ask for what they need; response options ranged from (1) not at all well to (4) very well. Respondents were asked how well students advocate for themselves in three settings, if applicable: special education classes (*School Program Survey* npr1D18d), vocational education classes (*School Program Survey* npr1C4d), and general education classes (*Teacher Survey* nts1C1d). If students had scores in more than one setting, these were averaged together.

Educational experiences. Several aspects of students' educational experiences were considered in relation to level of student participation in transition planning:

percentage of time spent in a general education setting, history of suspension or expulsion, relationships with teachers, and whether the student had received instruction related to transition planning.

Percent instruction in general education setting. Participation in general education was determined by calculating the percentage of credits students earned from courses in a general education setting, as noted in the *Transcript Data*. If this information was not available, data reported in the *School Program Survey* were used to calculate the percentage (Wagner et al., 2012). To determine this percentage, I first calculated the total number of courses the student took. This value was the sum of the 11 items related to different content areas (*School Program Survey* npr2A3a -k). Next, I calculated the number of courses taken in a general education setting. These items were each recoded such that if the student did not receive instruction in a content area, the value for the corresponding question about setting was (0) no, rather than missing. Finally, the number of courses taken in general education was divided by the total number of courses taken by the student. In categorizing these data, 0-33% was considered a low level of inclusion in general education classes, 34-66% was medium, and 67-100% was high.

History of suspension or expulsion. A variable was created to indicate whether a student's parent reported that the student had ever been suspended or expelled. This item (*Parent Interview* np2D5d_ever) was categorized into two categories: (0) no, or (1) yes.

Relationship with teachers. Parents were asked to rate their child's ability to get along with teachers on a 6-point scale (*Parent Interview* np2K2). This item was reverse-scored so that the higher score indicates greater ability to get along with teachers: (1) does not interact to (6) very well. Because few participants were rated on many of the

lower scores, these were combined for these analyses as follows: (1) does not interact to gets along pretty well with teachers, and (2) gets along very well with teachers.

Instruction in transition planning. Data were collected regarding whether the student received instruction that specifically focused on transition planning (*School Program Survey* npr2E3); possible responses were (0) no, or (1) yes. For those missing data for this variable, a second question was considered, regarding whether the school offers instruction that specifically focuses on transition planning (*School Characteristics Survey* nsc1D11). If the answer to this question was no (the school does not offer such instruction), this value was used. This substitution was made for one participant.

Parent expectations and involvement. The current study also explored the relationship between student participation in transition planning and various characteristics related to parental expectations and involvement. These included parents' expectations of their child's participation in postsecondary education; parent involvement at school; whether a parent attended the transition planning meeting; and how frequently an adult in the household discussed post-school plans with the student.

Expectations of postsecondary education. Parents were asked to rate the likelihood that their son or daughter would attend school after high school (*Parent Interview* np2G6). This item was reverse-scored so that the higher score indicates greater likelihood of attending postsecondary education: (1) definitely won't to (4) definitely will. Because the first group was small, it was combined with the second group for analyses: (1) definitely won't or probably won't, (2) probably will, and (3) definitely will.

Involvement at school. Parents were asked to rate their own involvement at school on a series of items (*Parent Interview* np2E1b_a-c). These addressed how often

parents (a) attended general school meetings, (b) attended school or class events, and (c) volunteered at the school. Response options for these questions ranged from (0) never to (4) more than 6 times. These items were summed to form a scale (Wagner et al., 2012); if a data point for a single variable was missing, mean imputation was used to generate this value. Cronbach's alpha for these questions equaled .63. Possible scores range from 0 (no involvement indicated for each) to 16 (highest involvement for each). To categorize these data, 0-2 was considered low parent involvement, 3-5 was medium, and 6-12 was high.

Parent participation in transition planning. Teachers reported whether the students' parents were active participants in transition planning (*School Program Survey* npr1E8_07); possible responses were (0) no, or (1) yes.

Discussion of transition at home. Parents were asked to estimate how often an adult in the household had discussions with the student about their plans after high school (*Parent Interview* np2E5b). Possible responses ranged from (1) never to (4) regularly.

Outcome Variable

Teachers were asked to rate level of student participation in transition planning, thus: Which of the following best describes the student's role in transition planning? Response choices included the following: student has (1) not attended planning meetings or participated in the transition planning process; (2) been present in discussions of transition planning but participated very little or not at all; (3) provided some input as a moderately active participant; and (4) taken a leadership role in the transition planning process, helping set the direction of discussion, goals, and programs or service needs identified. Teachers were only asked to rate students for whom transition planning had

begun. Because only 6.25% of participants (n = 20) were rated a 4 (took a leadership role), the outcome variable was categorized as follows: (1) student has not attended meetings or participated; (2) student has been present, but participated very little or not at all; and (3) student has provided some input as a moderately active participant, or has taken a leadership role. Of the 320 participants, 15.2% fell in the first category (did not attend; n = 50); 47.5% were in the second category (present but participated little; n = 150); and 37.3% were in the third category (moderate-active participant; n =120).

As noted previously, it is unclear whether level of student participation in transition planning is an ordinal variable. Therefore, it was considered categorical for preliminary analyses. Subsequent regression analyses were designed to test the hypothesis regarding the nature of the outcome variable--that is to determine whether it constitutes a single ordinal scale.

Data Analysis

To conduct analyses for this study, a three-step process was followed. First, preliminary analyses were conducted to determine the amount of missing data for each variable and to determine the level of correlation between predictors. Decisions regarding which variables to include were based on these analyses. Preliminary analyses were also conducted to compare participants included in the final sample with those who were excluded. Second, analyses were conducted to describe the relationships between predictor variables and the outcome variable, as well as between the predictors. Finally, logistic regression analyses were conducted to determine which characteristics independently predicted student attendance and participation in transition planning.

Preliminary Analyses

Exclusion of predictor variables. Initial analyses revealed high amounts of missing data for several variables. Three predictor variables were missing data for 20% or more of the sample and were excluded. Additionally, initial analyses revealed a high correlation between the Classroom Social Skills scale and the Classroom Participation scale (r = .68). Rather than include both scales in the regression, only the Classroom Social Skills scale was included in analyses (see Table 3).

Table 3

Predictor Variables Excluded from Analyses

Predictor	Variable	Missing	Reason for exclusion
1. School SES	*School Characteristics Survey* nsc1B5	24% (80)	> 20% missing
2. Relationship with teachers	*Parent Interview* np2K2	35% (110)	> 20% missing
3. Expectations of post-secondary education	*Parent Interview* np2G6	61% (190)	> 20% missing
4. Classroom participation scale	*School Program Survey* npr1C5a-d, npr1D19a-d; *Teacher Survey* nts2C6ar-d	7% (20)	highly correlated with Classroom Social Skills scale

Missing data. Table 4 quantifies missing data for the predictor variables included in analyses. For variables missing data, values were imputed based on the most frequent category for categorical variables, and the median for continuous variables (Harrell, 2001). This method is recommended for variables missing less than 5% of the sample, which describes all the predictor variables except one: the student's main language spoken at home. Because this variable was missing data for slightly above the guideline set by Harrell (5.4% of the sample), the same method was used for imputation.

Table 4

Missing Data for Predictor Variables

Predictor	Variable	Missing
Demographics		
Student gender	w2_Gend2	0
Student age	w2_Age4	0
Student ethnicity	w2_Eth6	0
Main language	*Parent Interview* np1A4b	5.4% (20)
Household income	w2_Incm3	3.8% (10)
Parent education level	*Parent Interview* np1MotherEd, FatherEd	4.4% (10)
Surrounding community	w2_Urb3	2.8% (10)

Table 4 (continued)

Predictor	Variable	Missing
Student characteristics		
Student has ID	*Parent Interview* HasMR	0
Functional cognitive skills	*Parent Interview* np2G3a_a-d	1.3% (0)
Ability to communicate	*Parent Interview* np2B5b	0.6% (0)
Ability to understand	*Parent Interview* np2B5e	1.6% (10)
General social skills	*Parent Interview* np1G1a-np1G1k	2.2% (10)
Classroom social skills	*School Program Survey* npr1C4a-c, npr1D18a-c; *Teacher Survey* nts1C1a-c	2.2% (10)
Self-advocacy	*School Program Survey* npr1C4d, npr1D18d; *Teacher Survey* nts1C1d	2.2% (10)
School experiences		
Percent in gen. ed.	*Transcript Data* ntsPctgUnits_GPl; *School Program Survey* npr2A3a-k	2.8% (10)
Ever suspended or expelled	*Parent Interview* np2D5d_ever	0
Instruction in transition planning	*School Program Survey* npr2E3	0
Parent involvement		
Involvement at school	*Parent Interview* np2E1b_a-c	0.3% (0)
Parent attended ITP meeting	*School Program Survey* npr1E8_07	0.3% (0)
Discussion of transition at home	*Parent Interview* np2E5b	0

The last stage of preliminary analyses involved comparing the participants included in the final sample with those excluded from analyses. Chi-square statistics were calculated to determine whether the two groups differed significantly.

Similar to Carter et al. (2012), this study uses data from a small subset of the larger sample upon which the NLTS2 sampling weights were based. Therefore, the sampling weights developed for use with NLTS2 were not used. Because weights were not used, these findings cannot be interpreted as representative of the national population of students receiving special education services. Though not nationally representative, these findings can still provide helpful information about the relationships between the predictor and outcome variables. Because little is known about involvement in transition planning among students with ASD, this information is particularly needed.

Relationships Between Variables

Non-parametric statistics were used to describe relationships between the predictor variables and the outcome, as well as to describe interrelationships between the predictors. Because the outcome variable is categorical, chi-square statistics were calculated to describe the relationships between the predictor variables and the outcome variable. To describe the relationships between the different predictor variables, Spearman's rho correlations were calculated. Spearman's rho is appropriate in this case because it does not make assumptions about the normal distribution of variables.

Regression Analyses

Prior to conducting regression analyses, collinearity statistics were examined to determine whether predictors were highly correlated with other predictors. A tolerance value of less than .20 and variance inflation factor (VIF) greater than 2.5 were used as criteria to indicate collinearity (Cohen, Cohen, West, & Aiken, 2003; Menard, 2002).

To determine whether the outcome variable is an ordinal scale, two binary logistic regressions were conducted. For the first (Regression A), the outcome variable was grouped into students who were absent compared with students who attended but participated little, participated moderately, or took a leadership role. For the second (Regression B), the outcome variable was grouped as follows: students who were absent or present but participated little compared with students who participated moderately or who took a leadership role.

If similar predictor variables are identified by both sets of regression analyses, this outcome would provide reason to consider the outcome variable an ordinal scale. To follow up this outcome, an ordinal logistic regression would be conducted. In contrast, if different predictor variables were identified by the two regressions, this outcome would document the need to consider the outcome variable in two separate regressions. That is, identifying unique predictor variables within each of the regressions would provide evidence that attendance at transition planning meetings is predicted by different variables than those that predict being an active participant in these meetings. To follow up this outcome, additional univariate analyses would be conducted, categorizing the outcome variable as it had been grouped in the two regressions.

CHAPTER III

RESULTS

This chapter first details the results of preliminary analyses comparing the final sample with the group of excluded students. Next, it describes the relationships between the individual predictor variables and the outcome variable, as well as the relationships among predictor variables. Finally, it presents the findings of the regression analyses.

Preliminary Results

Participants in the final sample differ significantly from those excluded from the sample on five of the 20 predictor variables: ethnicity, household income, diagnosis of ID, functional cognitive skills, and percentage of time in general education (see Table 5). African American students were more likely to be excluded from the sample than Caucasian students, χ^2 (2, N = 560) = 13.92, $p \leq .001$. Also, students from families with an income of $25,000 or less were more likely to be excluded from the sample than those from families with an income of $50,000 or more, χ^2 (2, N = 490) = 12.69, $p = .002$.

Additionally, students with ID were more likely to be excluded from the final sample, χ^2 (1, N = 450) = 4.20, $p = .04$; as were students with low functional cognitive skills, χ^2 (2, N = 430) = 9.08, $p = .01$, and those who spend 0-33% of instructional time in general education, χ^2 (2, N = 530) = 6.85, $p = .03$. Therefore, the final sample is more likely to include Caucasian students, those from families with a higher SES, and those who are higher functioning. Notably, the two groups do not differ on the outcome variable, or on any of the 15 remaining predictor variables.

Table 5

Differences between the Final Sample and Excluded Students

Variable	Final Sample	Excluded	χ^2
Gender	*n* = 320, 0 missing	*n* = 240, 0 missing	
Male	84.2% (270)	80.8% (190)	
Female	15.8% (50)	19.2% (50)	1.12
Age at Wave 2	*n* = 320, 0 missing	*n* = 240, 0 missing	
16	20.6% (70)	24.1% (60)	
17	26.6% (80)	28.6% (70)	
18	31.6% (100)	26.1% (60)	
19-20	21.2% (70)	21.2% (50)	2.38
Ethnicity	*n* = 320, 0 missing	*n* = 240, 0 missing	
Caucasian	66.5% (210)	56.1% (130)	
African American	16.8% (50)	30.1% (70)	
Other	16.8% (50)	13.8% (30)	13.92***
Main language at home	*n* = 300, 20 missing	*n* = 190, 60 missing	
English	87.3% (260)	90.3% (170)	
Other	12.7% (40)	9.7% (20)	1.03
Household income	*n* = 300, 10 missing	*n* = 180, 60 missing	
$25,000 or less	21.1% (60)	34.4% (60)	
$25,001-50,000	25.3% (80)	26.2% (50)	
$50,000 or more	53.6% (160)	39.3% (70)	12.69**
Parent education level	*n* = 300, 10 missing	*n* = 180, 60 missing	
Less than high school	8.3% (30)	10.9% (20)	
HS grad or GED	20.2% (60)	27.9% (50)	
Some College	32.8% (100)	31.1% (60)	
B.A. or higher degree	38.7% (120)	30.1% (60)	6.29

Table 5 (continued)

Variable	Final Sample	Excluded	χ^2
Surrounding community	*n* = 300, 10 missing	*n* = 230, 20 missing	
Suburban	55.4% (170)	53.5% (120)	
Rural	6.8% (20)	8.4% (20)	
Urban	37.8% (120)	38.1% (90)	0.51
Has ID	*n* = 320, 0 missing	*n* = 130, 110 missing	
No	90.2% (290)	83.3% (110)	
Yes	9.8% (30)	16.7% (20)	4.20*
Functional Cognitive Skills	*n* = 310, 0 missing	*n* = 120, 120 missing	
Low	27.2% (90)	42.1% (50)	
Medium	50.3% (160)	38.8% (50)	
High	22.4% (70)	19% (20)	9.08**
Expressive communication	*n* = 310, 0 missing	*n* = 130, 110 missing	
A lot of trouble	20.4% (60)	23.8% (30)	
A little trouble	44.6% (140)	47.7% (60)	
No trouble	35% (110)	28.5% (40)	1.91
Receptive communication	*n* = 310, 10 missing	*n* = 130, 110 missing	
A lot of trouble	17% (50)	16.9% (20)	
A little trouble	63.7% (200)	61.5% (80)	
No trouble	19.3% (60)	21.5% (30)	0.30
General social skills	*n* = 310, 10 missing	*n* = 130, 120 missing	
Low	35.6% (110)	44% (60)	
Medium	52.1% (160)	45.6% (60)	
High	12.3% (40)	10.4% (10)	2.67

Table 5 (continued)

Variable	Final Sample	Excluded	χ^2
Classroom social skills	*n* = 310, 10 missing	*n* = 230, 10 missing	
Low	20.4% (60)	25.5% (60)	
Medium	44.3% (140)	42.9% (100)	
High	35.3% (110)	31.6% (70)	2.15
Self-advocacy ability	*n* = 310, 10 missing	*n* = 230, 10 missing	
Low	12% (40)	16.5% (40)	
Fair	36.9% (110)	40.4% (90)	
Moderate	36.2% (110)	32.2% (70)	
High	14.9% (50)	10.9% (30)	4.64
Percentage of time in gen. ed.	*n* = 310, 10 missing	*n* = 220, 20 missing	
0-33%	55.4% (170)	66.7% (150)	
34-66%	16.6% (50)	11.9% (30)	
67-100%	28% (90)	21.5% (50)	6.85*
Ever suspended/expelled	*n* = 320, 0 missing	*n* = 130, 110 missing	
No	79.4% (250)	80.5% (100)	
Yes	20.6% (70)	19.5% (30)	0.06
Instruction in transition planning	*n* = 320, 0 missing	*n* = 140, 120 missing	
No	27.8% (90)	27.7% (40)	
Yes	72.2% (230)	72.3% (100)	.00
Parent involvement at school	*n* = 320, 0 missing	*n* = 120, 120 missing	
Low	48.9% (150)	59.8% (70)	
Medium	35.6% (110)	28.2% (30)	
High	15.6% (50)	12% (10)	4.10

Table 5 (continued)

Variable	Final Sample	Excluded	χ^2
Parent involved at meeting	*n* = 320, 0 missing	*n* = 170, 70 missing	
No	5.7% (20)	8.1% (10)	
Yes	94.3% (300)	91.9% (160)	1.03
Discussed transition at home	*n* = 320, 0 missing	*n* = 80, 160 missing	
Never	18.7% (60)	23.8% (20)	
Rarely	9.2% (30)	6.3% (10)	
Occasionally	32% (100)	35% (30)	
Regularly	40% (130)	35% (30)	2.09
Role in transition planning	*n* = 320, 0 missing	*n* = 160, 80 missing	
Absent	15.2% (50)	15.2% (30)	
Present, participated little	47.5% (150)	46.3% (80)	
Moderate-active participant	37.3% (120)	38.4% (60)	0.06

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Relationships between Variables

Relationships between Predictor and Outcome Variables

Demographic characteristics. Of the seven demographic variables, three were significantly related to the outcome variable: age, ethnicity, and household income. First, compared with older students (aged 18-20), younger students (aged 16-17) were more likely to take an active role in their transition planning, χ^2 (6, N = 320) = 20.68, p = .002. Second, Caucasian students were more likely to take a moderate to active role in their transition planning and less likely to be absent, compared with students of other ethnicities, χ^2 (4, N = 320) = 19.99, $p \leq .001$. Finally, compared with lower-income students, higher-income students were more likely to be present and take a moderate to active role in their transition planning, χ^2 (4, N = 320) = 12.62, $p \leq .05$.

Student characteristics. Of the seven variables related to student characteristics, only one was not significantly related to the outcome variable: a diagnosis of ID. Results related to functional and communication abilities, social skills, and self-advocacy are reported in the following sections.

Functional and communication skills. Students with higher functional cognitive skills are more likely to attend and take an active role in transition planning, χ^2 (4, N = 320) = 52.21, $p \leq .001$. Similarly, students with greater expressive communication are more likely to attend and take an active role in transition planning, χ^2 (4, N = 320) = 41.99, $p \leq .001$. Finally, receptive communication was related to student participation in transition planning, χ^2 (4, N = 320) = 19.61, $p \leq .001$. Students with lower receptive communication skills were more likely to be absent or to be present but participate little.

Compared with students with higher receptive communication, they were less likely to participate actively in their transition planning.

Social skills. Students with better general social skills are more likely to attend and take an active role in transition planning, χ^2 (4, N = 320) = 11.39, p = .02. Likewise, students with better classroom social skills are more likely to attend and take an active role in transition planning, χ^2 (4, N = 320) = 29.40, $p \leq .001$.

Self-advocacy. Students with greater self-advocacy skills are more likely to attend and take an active role in transition planning, χ^2 (6, N = 320) = 47.18, $p \leq .001$.

School experiences. Of the three variables related to school experiences, only one related to the outcome. Compared to students who spend little time in general education, those who spend a greater percentage of time in general education settings are more likely to attend and participate in transition planning, χ^2 (4, N = 320) = 64.05, $p \leq .001$.

Parent involvement. Of the three variables related to parent involvement, only one was significantly related to the outcome variable. The more frequently students discussed their plans after high school with a parent, the more likely students were to attend and take an active role in transition planning, χ^2 (6, N = 320) = 62.82, $p \leq .001$.

Chi-square statistics are reported for all predictor variables in relation to the outcome variable (see Table 6). For most predictors, the outcome was grouped into three categories: the student (a) was absent; (b) was present, but participated little; and (c) took a moderate to active role. However, for several predictor variables, the expected frequency for some cells was less than 5. For these, the outcome was grouped into two categories: the student (a) was absent, or present but participated little; and (b) took a moderate to active role. These variables are listed at the end of Table 6.

Table 6

Relationships between Predictors and Participation in Transition Planning

Variable	Absent	Present	Participated	χ^2
Gender				
Male	15.4% (40)	45.1% (120)	39.5% (110)	
Female	14% (10)	60% (30)	26% (10)	4.07
Age at Wave 2				
16	16.9% (10)	33.8% (20)	49.2% (30)	
17	9.5% (10)	44% (40)	46.4% (40)	
18	19% (20)	47% (50)	34% (30)	
19-20	14.9% (10)	65.7% (40)	19.4% (10)	20.68**
Ethnicity				
Caucasian	11% (20)	43.8% (90)	45.2% (100)	
African American	24.5% (10)	56.6 % (30)	18.9% (10)	
Other	22.6% (10)	52.8% (30)	24.5% (10)	19.99***
Main language at home				
English	15.1% (40)	46.8% (130)	38.1% (110)	
Other	15.8% (10)	52.6% (20)	31.6% (10)	0.64
Household income				
$25,000 or less	28.1% (20)	45.3% (30)	26.6% (20)	
$25,001-50,000	15.6% (10)	46.8% (40)	37.7% (30)	
$50,000 or more	10.3% (20)	48.6% (90)	41.1% (70)	12.62**

Table 6 (continued)

Variable	Absent	Present	Participated	χ^2
Parent education level				
< HS, HS grad / GED	17.4% (20)	44.2% (40)	38.4% (30)	
Some College	18.2% (20)	46.5% (50)	35.4% (40)	
B.A. or higher degree	11.5% (20)	50.4% (70)	38.2% (50)	2.68
Functional Cognitive Skills				
Low	24.7% (20)	62.4% (50)	12.9% (10)	
Medium	13.7% (20)	49.7% (80)	36.6% (60)	
High	7.1% (10)	24.3% (20)	68.6% (50)	52.21***
Expressive communication				
A lot of trouble	31.3% (20)	60.9% (40)	7.8% (10)	
A little trouble	14.8% (20)	46.5% (70)	38.7% (60)	
No trouble	6.4% (10)	40.9% (50)	52.7% (60)	41.99***
Receptive communication				
A lot of trouble	22.6% (10)	64.2% (30)	13.2% (10)	
A little trouble	12.8% (30)	47.3% (100)	39.9% (80)	
No trouble	16.7% (10)	33.3% (20)	50% (30)	19.61***
General social skills				
Low	19.1% (20)	54.5% (60)	26.4% (30)	
Medium	14.9% (30)	43.5% (70)	41.7% (70)	
High	5.3% (0)	44.7% (20)	50% (20)	11.39*

Table 6 (continued)

Variable	Absent	Present	Participated	χ^2
Classroom social skills				
Low	31.7% (20)	52.4% (30)	15.9% (10)	
Medium	13.2% (20)	50% (70)	36.8% (50)	
High	8.3% (10)	41.3% (50)	50.5% (60)	29.40***
Self-advocacy ability				
Low	32.4% (10)	56.8% (20)	10.8% (0)	
Fair	18.2% (20)	57.9% (70)	24% (30)	
Moderate	8.9% (10)	42% (50)	49.1% (60)	
High	8.7% (0)	26.1% (10)	65.2% (30)	47.18***
Percent time in gen. ed.				
0-33%	22.9% (40)	55.9% (100)	21.2% (40)	
34-66%	7.8% (0)	52.9% (30)	39.2% (20)	
67-100%	3.5% (0)	26.7% (20)	69.8% (60)	64.05***
Ever suspended/expelled				
No	16.3% (40)	49% (120)	34.7% (90)	
Yes	10.8% (10)	41.5% (30)	47.7% (30)	4.01
Instruction in transition planning				
No	18.2% (20)	42% (40)	39.8% (40)	
Yes	14% (30)	49.6% (110)	36.4% (80)	1.67

Table 6 (continued)

Variable	Absent	Present	Participated	χ^2
Parental school involvement				
Low	11.7% (20)	53.2% (80)	35.1% (50)	
Medium	19.5% (20)	43.4% (50)	37.2% (40)	
High	16.3% (10)	38.8% (20)	44.9% (20)	5.86
Discussed transition at home				
Never/Rarely	31.8% (30)	62.5% (60)	5.7% (10)	
Occasionally	10.9% (10)	44.6% (50)	44.6% (50)	
Regularly	7.1% (10)	39.4% (50)	53.5% (70)	62.82***

Variable	Absent/present	Participated	χ^2
Surrounding community			
Suburban	59.8% (110)	40.2% (70)	
Rural	81% (20)	19% (0)	
Urban	63.8% (70)	36.2% (40)	3.70
Has ID			
No	61.8% (180)	38.2% (110)	
Yes	71% (20)	29% (10)	1.01
Parent attended meeting			
No	72.2% (10)	27.8% (10)	
Yes	62.1% (190)	37.9% (110)	0.75

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Relationships among Predictor Variables

To describe the relationships among the predictor variables, Spearman's rho correlations were calculated. Nine of the 20 predictors were not correlated above .30 with any other predictor variables: gender, age, main language spoken at home, surrounding community, whether the student has ID, whether the student has ever been suspended or expelled, whether the student received instruction in transition planning, parent involvement at school, and parent attendance at the transition planning meeting.

For ease of presentation, only the 11 variables with correlations of .30 or above were reported in Table 7. Several of these were significantly correlated with many other predictors. Five variables were significantly correlated with nine of the 10 other predictors listed in Table 7: functional cognitive skills, ability to communicate, self-advocacy skills, percentage of time spent in general education settings, and how often transition is discussed at home. The highest correlation was between functional cognitive skills and the percentage of time spent in general education settings, r_s (320) = .62, $p <$ .01.

Though not so highly correlated that they should be excluded, many predictor variables were clearly related. For example, the three demographic variables (ethnicity, household income, and parent education level) were correlated. Similarly, many of the variables related to student characteristics were correlated. Conversely, the 9 variables excluded from Table 7 are not correlated above .30 with any other predictor variables. Therefore, several of the 20 predictor variables are highly interrelated, and several are not strongly related to any of the others.

Table 7. *Spearman's Rho Correlations between Predictor Variables*

	1	2	3	4	5	6	7	8	9	10	11
1. Ethnicity	--										
2. Household income	.35**	--									
3. Parent education level	.24**	.39**	--								
4. Functional skills	.27**	.14*	.09	--							
5. Ability to communicate	.14*	.12*	-.01	.51**	--						
6. Ability to understand	.04	.05	-.01	.24**	.33**	--					
7. General social skills	.03	.08	.00	.36**	.40**	.26**	--				
8. Classroom social skills	.10	.10	.04	.25**	.12*	.13*	.32**	--			
9. Self-advocacy skills	.21**	.18**	.08	.38**	.27**	.23**	.30**	.58**	--		
10. Percent time in gen. ed.	.25**	.23**	.11	.62**	.46**	.21**	.24**	.29**	.43**	--	
11. How often discussed transition at home	.21**	.14*	.04	.55**	.44**	.25**	.32**	.21**	.39**	.51**	--

* $p \leq .05$. ** $p \leq .01$.

Regression Analyses

Prior to conducting the regression analyses, collinearity statistics were examined to determine whether predictors were so highly correlated with other predictors that they should be excluded. Because no predictors had a tolerance value less than .20, or a VIF greater than 2.5, no indications of multicollinearity were found (see Table 8).

Table 8

Collinearity Statistics for Predictor Variables

Variable	Tol.	VIF	Variable	Tol.	VIF
Gender	.89	1.13	Receptive communication	.81	1.24
Age	.85	1.17	General social skills	.67	1.49
Ethnicity	.79	1.27	Classroom social skills	.57	1.76
Main language at home	.93	1.07	Self-advocacy ability	.53	1.87
Household income	.73	1.37	Percent time in gen. ed.	.52	1.91
Parent education level	.79	1.27	Ever suspended/expelled	.82	1.22
Surrounding community	.92	1.09	Instruction in transition plan.	.91	1.09
Has ID	.92	1.09	Parental school involvement	.88	1.32
Functional Cognitive Skills	.44	2.26	Parent attended ITP meeting	.94	1.07
Expressive communication	.57	1.76	Discussed transition at home	.58	1.74

Note. Tol. = tolerance value; VIF = variance inflation factor.

Next, two binary logistic regressions were conducted to determine whether the outcome variable constituted an ordinal scale. For Regression A, the outcome variable was grouped into students who were absent versus those who were present (e.g., students who attended but participated little, those who participated moderately, and those who took a leadership role). The combination of four variables significantly predicted whether students would be present (versus absent) for transition planning, χ^2 (22, N = 320) = 67.84, $p < .001$ (see Table 9).

The variables that significantly predicted student attendance were expressive communication skills; percentage of time in general education settings; frequency of discussions about transition with parents; and parental involvement at school. Higher expressive communication skills were positively related to student attendance ($p \leq .01$, OR = 2.80), as was a greater percentage of time in general education settings ($p \leq .05$, OR = 1.02). Predictors related to parent involvement produced contrasting results. Whereas more frequent discussions at home about plans for after high school was positively related to student attendance ($p \leq .05$, OR = 1.83), greater parental involvement at school was negatively related ($p \leq .01$, OR = 0.81).

For Regression B, the outcome variable was grouped as follows: students who were absent or present but participated little versus students who participated moderately and those who took a leadership role. The combination of five variables significantly predicted whether students would be active participants, χ^2 (22, N = 320) = 129.94, $p < .001$ (see Table 9).

Table 9. *Results of Logistic Regression Analyses*

Variable	Regression A: Student attendance				Regression B: Active student participation			
	β	SE	Wald χ^2	OR [95% CI]	β	SE	Wald χ^2	OR [95% CI]
Demographics								
Gender	- 0.80	0.55	2.10	0.45 [0.15, 1.32]	0.27	0.45	0.36	1.31 [0.54, 3.19]
Age	0.32	0.19	2.88	1.38 [0.95, 1.99]	**- 0.36**	**0.15**	**5.38***	**0.70 [0.52, 0.95]**
Ethnicity (compared to Caucasian)			0.20				**6.20***	
African American	- 0.17	0.50	0.11	0.85 [0.32, 2.26]	**- 1.10**	**0.49**	**5.03***	**0.33 [0.13, 0.87]**
Other	- 0.22	0.56	0.15	0.81 [0.27, 2.41]	- 0.75	0.54	1.95	0.47 [0.17, 1.35]
Main language	- 0.63	0.65	0.94	0.53 [0.15, 1.90]	- 0.23	0.54	0.19	0.79 [0.28, 2.27]
Household income	0.42	0.26	2.50	1.52 [0.91, 2.54]	0.05	0.22	0.05	1.05 [0.68, 1.63]
Parent education level	0.23	0.26	0.79	1.26 [0.76, 2.08]	- 0.30	0.20	2.35	0.74 [0.50, 1.09]
Community (compared to Suburban)			5.62				3.85	
Rural	- 0.10	0.67	2.24	0.37 [0.10, 1.36]	-1.15	0.71	2.58	0.32 [0.08, 1.29]
Urban	0.67	0.43	2.40	1.96 [0.84, 4.58]	0.28	0.33	0.73	1.32 [0.70, 2.50]
Student characteristics								
Student has ID	0.76	0.57	1.81	2.14 [0.71, 6.49]	- 0.58	0.61	0.93	0.56 [0.17, 1.83]
Functional cognitive skills	0.00	0.70	0.00	1.00 [0.87, 1.15]	0.11	0.06	3.23	1.12 [0.99, 1.26]

Table 9 (continued)

Variable	Regression A: Student attendance				Regression B: Active student participation			
	β	SE	Wald χ^2	OR [95% CI]	β	SE	Wald χ^2	OR [95% CI]
Student characteristics								
Expressive communication	**1.03**	**0.35**	**8.55****	**2.80 [1.40, 5.58]**	0.16	0.27	0.35	1.17 [0.70, 1.98]
Receptive communication	- 0.54	0.32	2.78	0.58 [0.31, 1.10]	0.34	0.29	1.39	1.41 [0.80, 2.48]
General social skills	- 0.08	.06	1.42	0.93 [0.82, 1.05]	- 0.04	0.05	0.63	0.96 [0.88, 1.06]
Classroom social skills	0.25	.013	3.78	1.29 [0.10, 1.66]	0.17	0.12	1.93	1.18 [0.93, 1.50]
Self-advocacy	0.08	0.31	0.06	1.08 [0.59, 1.97]	**0.55**	**0.24**	**5.40***	**1.74 [1.09, 2.78]**
School experiences								
Percent in general education	**0.02**	**0.01**	**3.91***	**1.02 [1.00, 1.03]**	**0.01**	**0.01**	**5.70***	**1.01 [1.00, 1.02]**
Ever suspended or expelled	- 0.10	0.54	0.03	0.91 [0.31, 2.64]	- 0.01	0.40	0.00	0.99 [0.45, 2.18]
Instruction in transition planning	- 0.60	0.42	2.11	0.55 [0.24, 1.23]	- 0.27	0.36	0.57	0.76 [0.38, 1.55]
Parent involvement								
Involvement at school	**- 0.21**	**0.08**	**7.80****	**0.81 [0.70, 0.94]**	- 0.03	0.06	0.35	0.97 [0.87, 1.08]
Parent attended ITP meeting	- 0.56	0.74	0.58	0.57 [0.13, 2.43]	- 0.11	0.74	0.02	0.89 [0.21, 3.83]
Discussion of transition at home	**0.61**	**0.30**	**4.12***	**1.83 [1.02, 3.29]**	**0.49**	**0.24**	**4.07***	**1.63 [1.01, 2.61]**

Note. Significant findings are shown in bold. β = coefficient; SE = standard error for the coefficient; OR = odds ratio; CI = confidence interval.

* $p \leq .05$. ** $p \leq .01$.

The variables that significantly predicted active student participation were self-advocacy ability; percentage of time in general education; ethnicity; age; and frequency of discussions about transition with parents. First, African American students were less likely than Caucasian students to actively participate in transition planning ($p \leq .05$, OR = 0.33). Likewise, older students were less likely to actively participate in transition planning ($p \leq .05$, OR = 0.70). Additionally, higher functioning students were more likely to take an active role in transition planning. Specifically, having higher self-advocacy skills was positively related to active student participation ($p \leq .05$, OR = 1.74), as was greater percentage of time in general education ($p \leq .05$, OR = 1.01). Finally, greater frequency of discussions at home about post-school plans was positively related to active student participation ($p \leq .05$, OR = 1.63).

As shown in Table 10, both the percentage of time spent in general education settings and how often transition is discussed at home are significant predictors in Regression A and in Regression B. However, several variables also uniquely predict both (a) student presence in transition planning meetings, and (b) active participation in transition planning meetings. In Regression A, the unique variables that significantly predicted student attendance were expressive communication skills and parent involvement at school. In Regression B, the unique variables that significantly predicted active participation were student age, ethnicity, and self-advocacy ability. These findings indicate that the outcome variable should not be considered an ordinal scale, and that conducting two separate logistic regressions was appropriate.

Table 10. *Predictors of Student Attendance and Participation in Transition Planning*

	Regression A: Student attendance				Regression B: Active student participation			
Variable	β	SE	Wald χ^2	OR [95% CI]	β	SE	Wald χ^2	OR [95% CI]
Expressive communication	1.03	0.35	8.55**	2.80 [1.40, 5.58]				
Parent involvement at school	- 0.21	0.08	7.80**	0.81 [0.70, 0.94]				
Percent in general education	0.02	0.01	3.91*	1.02 [1.00, 1.03]	0.01	0.01	5.70*	1.01 [1.00, 1.02]
Discussed transition at home	0.61	0.30	4.12*	1.83 [1.02, 3.29]	0.49	0.24	4.07*	1.63 [1.01, 2.61]
Age					- 0.36	0.15	5.38*	0.70 [0.52, 0.95]
Ethnicity (compared to Caucasian)					--	--	6.20*	--
African American					- 1.10	0.49	5.03*	0.33 [0.13, 0.87]
Self-advocacy					0.55	0.24	5.40*	1.74 [1.09, 2.78]

Note. β = coefficient; SE = standard error for the coefficient; OR = odds ratio; CI = confidence interval.

* $p \leq .05$. ** $p \leq .01$.

Post-hoc Analyses

To follow up these results, chi-square statistics were calculated between each of the significant predictor variables and the outcome. Both sets of follow-up analyses mirrored the categories used in the regressions. As shown in Table 11, the follow-up analyses for Regression A document a significant relationship between three of the four predictor variables and the outcome variable. Although a significant predictor in the regression, parental involvement in school was not related to the outcome in the univariate analysis. Thus, taking the other variables into account in the regression reveals that parental involvement at school is significantly related to student attendance and participation at transition planning meetings among students with ASD.

As shown in Table 11, the follow-up analyses for Regression B document a significant relationship between student participation in transition planning and all five predictor variables identified by the regression. Though percentages presented for African American students and students of other ethnicities are similar in Table 11, only African American students differed significantly from Caucasian students in the regression. Thus, taking the other variables into account in the regression reveals that only African American students with ASD differed significantly from Caucasian students with ASD in terms of active participation in transition planning.

Table 11

Post-hoc Analyses for Regression A and Regression B

Regression A predictors	Absent	Present/participated	χ^2
Expressive communication			
A lot of trouble	41.7% (20)	16.4% (40)	
A little trouble	43.8% (20)	45.1% (120)	
No trouble	14.6% (10)	38.4% (100)	19.48***
Percent time in gen. ed.			
0-33%	85.4% (40)	51.5% (140)	
34-66%	8.3% (0)	17.5% (50)	
67-100%	6.3% (0)	31% (80)	19.55***
Parental school involvement			
Low	37.5% (20)	50.7% (140)	
Medium	45.8% (20)	34% (90)	
High	16.7% (10)	15.3% (40)	3.12
Discussed transition at home			
Never/Rarely	58.3% (30)	22.4% (60)	
Occasionally	22.9% (10)	33.6% (90)	
Regularly	18.8% (10)	44% (120)	26.81***
Regression B predictors	Absent/present	Participated	χ^2
Age at Wave 2			
16	16.7% (30)	27.1% (30)	
17	22.7% (50)	33.1% (40)	
18	33.3% (70)	28.8% (30)	
19-20	27.3% (50)	11% (10)	16.58***

Table 11 (continued)

Regression B predictors	Absent/present	Participated	χ^2
Ethnicity			
Caucasian	58.1% (120)	80.5% (100)	
African American	21.7% (40)	8.5% (10)	
Other	20.2% (40)	11% (10)	17.05***
Self-advocacy ability			
Low	16.7% (30)	3.4% (0)	
Fair	46.5% (90)	24.6% (30)	
Moderate	28.8% (60)	46.6% (60)	
High	8.1% (20)	25.4% (30)	42.29***
Percent time in gen. ed.			
0-33%	71.2% (140)	32.2% (40)	
34-66%	15.7% (30)	16.9% (20)	
67-100%	13.1% (30)	50.8% (60)	58.58***
Discussed transition at home			
Never/Rarely	41.9% (80)	4.2% (10)	
Occasionally	28.3% (60)	38.1% (50)	
Regularly	29.8% (60)	57.6% (70)	54.19***

*** $p \leq .001$.

CHAPTER IV

DISCUSSION

Using data from a large-scale, national study, this investigation identified the characteristics that related to differences in attendance and participation in transition planning among students with ASD, the group least likely to attend and participate actively. Because the intervention literature provides little evidence regarding the effectiveness of interventions among this population, the current study provides needed information about this neglected group. This chapter presents a discussion of the findings, provides implications for research and practice around promoting participation in transition planning among students with ASD, and notes study limitations.

Summary of Findings

Nature of the Outcome Variable

To determine whether the outcome variable constitutes a single ordinal scale, two logistic regressions were conducted. The first identified predictors of student attendance (versus absence) at transition planning meetings. The second identified predictors of active student participation in transition planning (versus absence or attendance but little participation). Though these analyses identified a few common predictors, there were also a few predictors unique to only one regression. Thus, for Regression A, expressive communication skills and parental involvement at school were uniquely related to student

attendance. For Regression B, student age, ethnicity, and self-advocacy ability were uniquely related to active student participation.

The unique predictor variables identified in Regression A and in Regression B document that the outcome variable does not constitute a single ordinal scale, but that student attendance and active student participation are different outcomes with different associated predictors. Wagner et al. (2012) also took this approach in studying participation in transition planning among students with disabilities overall. Like the current study, Wagner and colleagues identified both predictor variables common to the two regressions, as well as predictors that uniquely related to student attendance and to active student participation. Thus, recent studies have found that student attendance at transition planning meetings is related to different predictor variables than active student participation in these meetings.

Regression A: Predictors of Attendance

Regression A identified the variables that significantly predicted attendance at transition planning meetings among students with ASD. Higher functioning was positively related to student attendance; specifically, higher expressive communication skills and a greater percentage of time in general education positively related to student attendance. As shown in Table 11, 85% of students who did not attend transition planning meetings were students who spent the least amount of time (0-33%) in general education settings. Though the connection between functioning level and student attendance is not readily apparent, it may be that the perceptions of teachers and parents are related to a

student's expressive communication skills and inclusion in general education settings. If students' teachers and parents do not perceive them as able to participate in transition planning meetings, these involved adults might be less likely to encourage attendance.

Regression A also identified two predictors related to parent involvement. Interestingly, these predictors produced contrasting results. Whereas student attendance was positively related to more frequent discussions at home about post-school plans, it was negatively related to greater parent participation at school (e.g., volunteering at the school; attending general school meetings and class events). This distinction between home- and school-based support has been noted before: among typically developing adolescents, "school-based" parental involvement has been found to be less desired by students and less effective (Hickman, Greenwood, & Miller, 1995; Hill & Tyson, 2009).

Additionally, it has been suggested that students with disabilities who have overly involved parents might be less likely to advocate for themselves (Korbel, McGuire, Banerjee, & Saunders, 2011). Sometimes pejoratively referred to as "helicopter parents," overly involved parents are thought to excessively "hover" around their children, interjecting in situations (particularly at school) in a way that inhibits the engagement of their children. Thus, overly involved parents have the potential to inhibit the development of their child's ability to plan, problem-solve, and engage in self-advocacy. This issue is particularly relevant in considering possible effects among young adults as they transition from greater dependence on parents in high school to greater independence in college, the workplace, and social engagement in the community.

The recent study conducted by Wagner et al. (2012) identified variables that predicted attendance in transition planning among students with various disabilities as a group. Similar to the current study, Wagner and colleagues found that a greater percentage of time spent in general education settings was positively related to student attendance. Also, Wagner and colleagues found that greater parent involvement at home (a scale which included the variable regarding frequency of discussions about transition planning) was positively related to student attendance. Though Wagner and colleagues did not include expressive communication skills in their regression model, they found that functional cognitive skills were positively related to student attendance. Among students with ASD in this sample, functional cognitive skills were correlated with expressive communication skills, r_s (320) = .51, $p <$ .01.

Though this study's findings were similar to the findings of Wagner et al. (2012), they also differed in some respects. For example, the current study found that greater parent participation at school was negatively related to student attendance. Additionally, Wagner et al. identified several predictors of attendance among students of various disabilities that were not significant predictors among this sample of students with ASD. These included: student age, functional cognitive skills, parent attendance at transition planning meetings, and whether the student had received instruction in transition planning at school. Wagner et al. also found parent expectations of student participation in postsecondary education to be a significant predictor; because data from this variable were missing for 61% of the sample, it was not included in the current study.

Regression B: Predictors of Participation

Regression B identified the variables that significantly predicted active student participation in transition planning meetings. Higher self-advocacy skills were positively related to active student participation. This relationship seems intuitive, in that self-advocacy involves both understanding personal limitations and communicating needs—skills that would help students participate effectively in transition planning meetings. Likewise, a greater percentage of time spent in general education settings was positively related to active student participation. Students who spend a greater percentage of time in general education settings are likely to be higher functioning. Thus, they are more likely to have the skills needed to participate effectively in transition planning. Further, they are more likely to be perceived by teachers and parents as able, and may therefore have more opportunities to participate than peers who are not perceived this way.

Several demographic variables were also related to the outcome variable. Consistent with prior findings, African American students were less likely than Caucasian students to actively participate in transition planning (e.g., Wagner et al., 2012). Notably, student attendance did not differ significantly by ethnicity; this difference in findings may be due to the IDEA transition mandates that require IEP teams to invite students to attend transition planning meetings. In addition to ethnicity, age was also related to student participation in transition planning. Compared to younger students, older students with ASD were less likely to be active participants in the transition planning process. This contrasts with results of the study conducted by Wagner et al. (2012), who found that age was positively related to active participation. In this sample,

age was related to functional skills, χ^2 (6, N = 320) = 16.27, p = .01, and to percentage of time in general education, χ^2 (6, N = 320) = 21.08, p = .002. Among students aged 19-20, 73% spent the least amount of time in general education settings (0-33%). Thus, compared to younger students, older students were lower functioning and less likely to be in general education settings.

Finally, more frequent discussions at home about post-school plans were positively related to student participation in transition planning. As shown in Table 11, 96% of students who took an active role in transition planning had occasional or regular discussions at home about post-school plans, compared to 4% who had such discussions rarely or never. Like this study, Wagner et al. (2012) found that attendance and active participation among students with disabilities was positively related to greater parent involvement at home (a scale that included the item regarding discussion of transition at home). However, in contrast with the findings of Wagner et al., participation among students with ASD did not relate to instruction in transition planning. Thus, conversations with parents about post-school plans were more influential than school-based instruction in preparing students with ASD to actively engage in the transition planning process.

Similar to the current study, Wagner et al. (2012) found that a greater percentage of time spent in general education was positively related to active participation among students with disabilities overall. Though Wagner et al. did not include self-advocacy skills in their model, functional cognitive skills were positively related to student attendance. Among students in this sample, functional cognitive skills were correlated with self-advocacy skills, r_s (320) = .38, $p <$ .01. Also, like the current study, Wagner and colleagues found that

African American students were less likely to actively participate, compared to Caucasian students.

Despite these similarities, some interesting differences also emerge from the two studies. First, Wagner et al. (2012) found that Hispanic students were less likely to actively participate, compared to Caucasian students. Due to a low sample size, the current study grouped Hispanic students into the Other ethnicity category; students in this category were not less likely to actively participate than Caucasian students. Additionally, Wagner et al. (2012) identified several predictors of attendance among students with disabilities that were not significant predictors among this sample of students with ASD. These included: household income, functional cognitive skills, student social skills, parental involvement at school, and whether the student had received instruction in transition planning. They also found parent expectations of participation in postsecondary education to be a significant predictor; because data from this variable were missing for 61% of the sample, it was not included in the current study.

Recurrent Themes and Divergent Findings

Inclusion in general education and higher functioning. Though differences in predictors were found between Regression A and B, and despite differences between the findings of this study and the study conducted by Wagner et al. (2012), the percentage of time a student spent in general education settings remained influential. For all analyses, students who spent a greater percentage of time in general education settings were more likely to attend and participate actively in transition planning.

This finding runs parallel to findings in both the current study, as well as the study conducted by Wagner et al. (2012). Though these studies included different combinations of predictor variables in regression analyses, both found that higher functioning was positively related to attendance and active participation in transition planning. Wagner et al. found higher functional cognitive skills to be a significant predictor of both student attendance and active participation among students with disabilities. In the current study of students with ASD, higher functioning was similarly related to these outcomes. Specifically, expressive communication skills were positively related to student attendance, and self-advocacy skills were positively related to active participation.

Instruction in transition planning. Among students with disabilities overall, having received instruction in transition planning was a significant predictor of both student attendance and active participation in transition planning meetings (Wagner et al., 2012). Among students with ASD, however, this variable was not significantly related to either outcome. The initial univariate analyses presented in Table 6 show that attendance and participation rates of students who received instruction in transition planning did not differ significantly from participation rates of students who did not receive such instruction. Thus, though instruction focused on transition planning was positively related to attendance and active participation among students with disabilities overall, the same cannot be said of this sample of students with ASD.

Parent involvement. In contrast, aspects of parent involvement were significant predictors of both outcomes. However, the relationship of parent involvement to attendance and participation in transition planning among students with ASD is complex. In considering this issue, it is important to note that involvement of parents of students

with ASD diverges from involvement among parents of students with disabilities as a group. Notably, parents of students with ASD are much more likely than other parents to attend IEP and transition planning meetings (Wagner et al., 2012). In the current study, almost 94% of parents attended their child's transition planning meeting (see Table 6). Thus, though Wagner et al. identified parent attendance at transition planning meetings as a predictor of attendance among students with disabilities overall, parent attendance did not significantly relate to the attendance of students with ASD.

Interestingly, Regression A produced contrasting results related to different facets of parent involvement. Like Wagner et al. (2012), I had hypothesized that greater parent involvement in school events would positively relate to student attendance, as parents modeling engagement in these activities would hypothetically promote student engagement. However, this hypothesis was not confirmed within the current study's sample of students with ASD and their families. Rather, student attendance was negatively related to greater parent participation at school (e.g., volunteering at the school; attending general school meetings and class events). Thus, it may be that overly involved "helicopter parents" inadvertently discourage the involvement of their children.

As noted previously, this negative association with greater parent involvement at school is counterbalanced by a positive relationship with greater frequency of conversations at home about post-school plans. More frequent conversations between parents and their adolescent children about their plans after high school were positively associated with student attendance. Likewise, more frequent conversations were also positively associated with active participation among students with ASD. This variable

was one of only two factors that significantly related to both student attendance and participation. These findings can empower parents of youth with ASD that such conversations play an important role in preparing students to hold similar conversations in the context of more formal school-based transition planning.

In considering these different aspects of parent participation, the experiences of parents of young adults with ASD offer important context. Among parents of children with disabilities, the transition out of high school has been cited as particularly stressful--filled with concerns about securing adult services, identifying employment or postsecondary educational opportunities, and considering social and residential needs (Taylor, 2009). And, compared to parents of students with other disabilities, parents of youth with ASD might experience relatively greater stress. Consider that youth with ASD are more likely than students with other disabilities to have a variety of support needs, and are the least likely to have no support needs (Shogren & Plotner, 2012). At the same time, youth with ASD exiting high school face a "steep decline in service receipt" (Shattuck, Wagner, Narendorf, Sterzing, & Hensley, 2011, p. 143), and are the least likely to participate in postsecondary employment or education (Shattuck et al., 2012).

Thus, compared to parents of students with other disabilities, parents of students with ASD consider transition planning to be the least useful (Shogren & Plotner, 2012). Within the context of this stressful period, it seems likely that parents view the transition planning process as a way to address some of the aforementioned challenges for their son or daughter with ASD. Though educators and researchers may consider student participation in transition planning as an opportunity for students to develop self-

determination skills, it might be the case that parents perceive the transition planning process differently. Instead, parents may primarily consider the transition planning meeting to be a challenging, often frustrating experience in which they must actively advocate for needed supports and services (Hetherington et al., 2010). These potential differences in perspective point to the need for greater communication between teachers and parents about transition planning (Lehmann, Bassett, & Sands, 1999).

Implications for Research and Practice

First, this study has revealed that instruction in transition planning is not significantly related to the attendance or active participation of students with ASD. This contrasts with findings of Wagner et al. (2012) that instruction in transition planning is positively related to student attendance and participation among students with disabilities overall. Among the students included in this sample, almost 69% of students received instruction in transition planning; this is similar to other studies based on NLTS2 data that report 71% of students with ASD receive this type of instruction (Cameto et al., 2006; Shogren & Plotner, 2012). Though a large percentage of students with ASD receive such instruction, it does not appear to affect their participation outcomes.

As noted by Shogren and Plotner (2012), research about the nature of this instruction is needed. Further, research is needed on the *effectiveness* of instruction in transition planning among students with ASD. Improved instruction and interventions to promote student participation in transition planning might be guided by this study's findings. Notably, student attendance and active participation in transition planning are related to higher student functioning (e.g., higher expressive communication and self-

advocacy skills; greater percentage of time spent in general education settings). This finding has implications for both research and practice.

Regarding research, future studies should focus on improving attendance and participation among students with lower expressive communication skills and self-advocacy skills. Interventions should incorporate research-based methods to support the communication of students with ASD in the transition planning context (e.g., picture exchange communication system [PECS]). Additionally, researchers might employ currently available interventions among youth with ASD (e.g., *Self-Directed IEP*; Arndt, Konrad, & Test, 2006), or adapt intervention packages to meet the individual needs of students. For example, Held, Thoma, and Thomas (2006) described the process one teacher used to facilitate self-determined transition planning with a high school student with ASD. The *Next S.T.E.P.* curriculum was used in conjunction with strategies that capitalized on the student's particular interests, and with technology that facilitated his participation.

Regarding practice, teachers and parents alike should work to ensure that students with lower expressive communication and self-advocacy skills are afforded the opportunity and support needed to attend and participate in their own transition planning. Because students with lower communication skills are likely to spend a greater percentage of time in self-contained settings, instruction in transition planning might be more easily incorporated into their school day (compared to peers who spend a greater percentage of time in general education settings). However, for teachers to incorporate effective transition planning, they will need appropriate training and support from administrators.

Beyond focusing on students with lower expressive communication and self-advocacy skills, researchers and practitioners should focus on encouraging more active participation in transition planning among African American students. In their study of students with disabilities overall, Wagner and colleagues (2012) found that African American students were less likely to participate actively in transition planning (compared to Caucasian students). The same result was found in this sample of students with ASD. In addition to lower participation rates in transition planning, African American students with ASD also experience worse post-school outcomes—lower rates of involvement in postsecondary education and employment, and a greater risk of receiving no services after exiting high school (Shattuck et al., 2012; Shattuck et al., 2011). These findings together document the need for a focus on improving the transition out of high school for African American youth with ASD.

In addition to implications related to the students themselves, these findings also have implications related to the parents of students with ASD. This study has shown that parent involvement influences the involvement of their adolescent children in the transition planning process. In both Regression A and Regression B, the more frequently students had discussions at home about post-school plans, the more likely students were to attend and actively participate in transition planning meetings. Given that these discussions are so influential, schools and support groups for families of children with ASD might develop resources that encourage and assist parents to broach these conversations more often. Additionally, researchers and practitioners should consider how best to partner with parents in the transition planning process (and particularly with regard to student involvement), so that efforts at home and school work in tandem.

Limitations

This study is the first to investigate the predictors of attendance and participation in transition planning among students with ASD. However, several limitations must be noted. First, participants who were missing data on the outcome and key predictor variables were excluded. Thus, the final sample was more likely to include students who were Caucasian, higher-income, and higher functioning. Despite this limitation, the excluded participants and the final sample did not differ on the outcome variable and most predictors. A related limitation was that several variables were missing data for over 20% of the sample, and were therefore excluded.

A second set of limitations relates to the questions included in the NLTS2 surveys. For example, the only question related to instruction in transition planning was dichotomous: whether the student received such instruction. Though important, additional items regarding this instruction would have been informative (e.g., frequency and length of instruction). Ultimately, this study was constrained to the focus and phrasing of items included in the NLTS2 surveys.

A final set of limitations concerns the sources of these data. Because teachers and parents were the source of all ratings of student skills and behavior, it is unclear whether observational data would differ from these ratings. Likewise, it is unclear whether students would rate their own skills and behaviors differently. Though NLTS2 included questions for students, the questions of interest were missing so much data that their inclusion was not feasible. For example, one question asked students whether they wanted to be more involved in IEP decisions; unfortunately, data were only available for

25% of the final sample. In future research, student perspectives would add much to our current understanding of the role that students play in their own transition planning.

Despite these limitations, analysis of the NLTS2 data has allowed insight into the various factors that predict attendance and active participation in transition planning among over 300 students with ASD. Due to the lack of research in this area among students with ASD, these findings can help practitioners and researchers target the students most in need of intervention, and can inform the instruction provided to students with ASD. Perhaps more importantly, this study revealed the influential role parents play in the lives of their transition-age children. By taking a holistic approach, practitioners and researchers might better support the transition out of high school for students with ASD and their families.

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