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Autonomy, Psychological Empowerment, and Self-Realization: Exploring Data on Self-Determination from NLTS2

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Abstract

Data from the National Longitudinal Transition Study-2 (NLTS2) were used to examine (a) the aspects of self-determination assessed in NLTS2 and (b) measurement equivalence and latent differences across the 12 disability categories recognized in IDEA. Three of the four essential characteristics of self-determination - autonomy, self-realization, and psychological empowerment – were directly assessed. Measurement equivalence was established but there were significant latent differences across specific disability groups. Students with high incidence disabilities (learning disabilities, emotional disturbances, speech or language impairments, and other health impairments) showed similar latent means and variances, as did students with sensory disabilities (visual and hearing impairments), and cognitive disabilities (autism, multiple disabilities and deaf-blindness). Students with intellectual disability, traumatic brain injury, and orthopedic impairments could not be collapsed with any other group. Across the six collapsed disability groups, there were significant differences in the latent variances and limited mean level differences. Implications for future research and practice are discussed.

Keywords: self-determination, transition, assessment, National Longitudinal Transition Study-2

Autonomy, Psychological Empowerment, and Self-Realization: Exploring Data on Self-Determination from NLTS2

Researchers have consistently identified the promotion of student self-determination as a key element of effective secondary transition services (Chadsey-Rusch, Rusch, & O'Reilly, 1991; Hughes et al., 1997; Thoma, Baker, & Saddler, 2002; Wehman, 2006). Reviews of the self-determination literature have found strong support for the efficacy of instructional strategies to teach skills (e.g., choice-making, decision-making, goal-setting) associated with self-determined behavior (Algozzine, Browder, Karvonen, Test, & Wood, 2001; Cobb, Lehmann, Newman-Gonchar, & Alwell, 2009; Wood, Fowler, Uphold, & Test, 2005). Teaching these skills has been linked with greater involvement in transition planning (Arndt, Konrad, & Test, 2006; Martin et al., 2006) and participation and progress in the general education curriculum (Konrad, Fowler, Walker, Test, & Wood, 2007; Palmer, Wehmeyer, Gipson, & Agran, 2004; Shogren, Palmer, Wehmeyer, Williams-Diehm, & Little, 2012). Self-determination may also influence post-school outcomes; researchers have suggested that students with disabilities who leave high school with higher levels of self-determination may be more likely to achieve positive post-school outcomes (Wehmeyer & Palmer, 2003; Wehmeyer & Schwartz, 1997).

Despite the growing body of research suggesting effective instructional strategies and positive impacts of promoting self-determination, significant gaps in the literature remain (Calkins, Wehmeyer, Bacon, Heller, & Walker, 2011; Cobb et al., 2009). One area that has begun to receive attention is the potential impact of individual and environmental factors on self-determination (Walker et al., 2011; Wehmeyer, Abery, et al., 2011). Individual and environmental factors likely play a role in the development of self-determination and may interact with interventions to promote self-determination, suggesting the importance of these

factors to designing effective interventions that address the unique support needs of each student.

Research has begun to explore specific individual and environmental factors that impact self-determination (Carter, Trainor, Owens, Sweden, & Sun, 2010; Lee et al., 2012; Nota, Ferrari, Soresi, & Wehmeyer, 2007; Shogren et al., 2007). One student factor that has received attention in the literature is disability category and/or characteristics associated with specific disability categories (e.g., intelligence, adaptive behavior, support need). It is logical to assume that students' capacity for self-determination may be influenced by their disability or support needs (Wehmeyer & Garner, 2003) and researchers have found differences in relative levels of self-determination between students served under different disability categories. For example, students with intellectual disability when compared to students with learning disabilities tend to report lower overall levels of self-determination (Shogren et al., 2007; Wehmeyer & Garner, 2003; Williams-Diehm, Wehmeyer, Palmer, Soukup, & Garner, 2008). Researchers have also found differences between students with emotional and behavioral disorders and learning disabilities (Carter et al., 2010). Outside of comparative work, researchers have suggested specific issues that must be considered in understanding self-determination in youth with autism (Wehmeyer & Shogren, 2008; Wehmeyer, Shogren, Zager, Smith, & Simpson, 2010) and visual impairments (Agran, Hong, & Blankenship, 2007). It is important to note that despite these differences in relative levels of self-determination, researchers assert that all students can develop self-determination with appropriate supports and accommodations (Wehmeyer & Garner, 2003). However, to provide appropriate supports and accommodations, the individual factors that impact relative levels of self-determination must be understood and considered.

Work to date on understanding individual and environmental factors has been limited in scope and by sample. Specific to disability, most studies have only compared students served in

certain disability categories (e.g., learning vs. intellectual disability, emotional and behavioral disorder vs. learning disability), and samples have not been representative of the population of students. The difficulties inherent to collecting a nationally representative sample of students in diverse disability categories limits the ability of researchers to systematically explore these variables. However, the National Longitudinal Transition Study-2 (NLTS2) provides data on a nationally representative sample of students served in each of the 12 disability categories recognized under the Individuals with Disabilities Education Act at the secondary level.

The original NLTS was funded by the U.S. Department of Education in the mid-1980s to explore the secondary school and post-school experiences of a nationally representative sample of students from each of disability categories recognized in IDEA. Previous research (Hasazi, Gordon, & Roe, 1985; Mithaug, Horiuchi, & Fanning, 1985; Sitlington & Frank, 1990), which had been the basis for many of the conclusions drawn about the post-school experiences of students with disabilities, had significant limitations related to sample size and generalizability. NLTS2 is a companion study to the original NLTS, again funded by the U.S. Department of Education. The purpose of NLTS2 was to provide an update on the secondary and post-school experiences of a nationally representative sample of students with disabilities as well as to allow for an analysis of the impact of transition services on the outcomes of students with disabilities. Data collection for NLTS2 began in 2000 and continued through 2010. Just at NLTS provided information that was generalizable to the population of students with disabilities and addressed the lack of nationally representative data on the factors that impacted the post-school outcomes of students with disabilities, NLTS2 also provides researchers with a mechanism to further explore and understand the factors that impact the post-school outcomes of a contemporary, nationally representative sample of students with disabilities.

NLTS2 included questions from an assessment of student self-determination, *The Arc's Self-Determination Scale* (Wehmeyer & Kelchner, 1995), and this provides an opportunity to explore the relative self-determination of students across the 12 disability categories in IDEA. However, NLTS2 only included a subset of items from *The Arc's Self-Determination Scale*. Therefore, our purpose in this study was twofold: (a) explore the questions included in NLTS2 from *The Arc's Self-Determination Scale* to determine what aspects of self-determination were measured by NLTS2 and develop a framework to be used in this and future research, and (b) examine measurement equivalence and latent differences in the self-determination constructs in youth across the 12 disability categories represented in NLTS2.

Methods

Sample

This study involved secondary analyses of National Longitudinal Transition Study-2 (NLTS2) data. As mentioned, the purpose of NLTS2 was to provide an update on the secondary and post-school experiences of a nationally representative sample of students with disabilities. Data was collected from 2000 to 2010 by SRI International. The NLTS2 sampling plan was designed so that the results would generalize to the population of students receiving special education services in the United States in each federally recognized disability category (i.e., autism, deaf-blindness, emotional disturbance, hearing impairment, learning disability, mental retardation, multiple disabilities, orthopedic impairment, other health impairment, speech or language impairment, traumatic brain injury, and visual impairment). A two-stage sampling process was used. First, a stratified (geographic region, size, community wealth) random sample of districts serving students aged 13-16 were selected from the universe of districts. Approximately 500 local education agencies (LEAs) ultimately contributed students to NLTS2.

In the second stage, students were selected from each LEA. The appropriate number of students to be sampled from each LEA within each disability category was calculated based on the size of the district and the number of students with disabilities. Students were randomly selected within each LEA until a sufficient sample was reached (with the exception of the categories of traumatic brain injury and deaf-blindness where all available students in a LEA were sampled because of the low incidence of these conditions). Approximately 1,250 students per disability category were sampled in Wave 1, which was projected to lead to a sufficient sample in Wave 5 of data collection. See SRI International (2000) and Javitz and Wagner (2005) for additional details, including analyses of sample attrition and representativeness. Because the NLTS2 sample was a stratified random sample designed to be generalizable to the national population of students within and across disability categories, when analyzing the data it must be weighted to ensure that the data adequately represents the target population.

Data Source

Data collection for NLTS2 began during the 2000-2001 school year and occurred in 5 waves (a wave equals a two year period of data collection), ending in 2010. The data used for our analyses was from the Student Assessment conducted in Waves 1 or 2 of NLTS2 as well as data provided by the school on the disability category under which the student was served. Students participated in the Student Assessment once when they were between 16-18 years old. Students in the older age cohorts (age 15 and 16 at the start of data collection) were sampled in Wave 1 and students in the younger age cohorts (age 13 and 14 at the start of data collection) were sampled in Wave 2 (Wagner, Newman, Cameto, & Levine, 2006). The data was collapsed into one Student Assessment file provided to researchers with a Restricted-Use Data License. The Direct Student Assessment tested the reading, math, social and life skills of youth using

standardized or criterion referenced assessments. Portions of the *The Arc's Self-Determination Scale* (Wehmeyer & Kelchner, 1995) were included in the Direct Assessment. Because of the range of support needs of students included in NLTS2, a small subset of students did not participate in the Direct Assessment, and instead teachers completed the *Scales of Independent Behavior-Revised* (SIB-R, Bruininks, Woodcock, Weatherman, & Hill, 1996). Students who did not participate in the Direct Assessment did not complete the assessment of self-determination.

Teachers screened students to determine who participated in the Direct Assessment. The emphasis was on having as many students participate as possible with modifications and supports. The criteria for taking the Direct Assessment were that the student: (a) had a consistent response mode, (b) was able to work with a stranger, and (c) was able to complete the first item of the Direct Assessment battery (Wagner et al., 2006). Javitz and Wagner (2005) reported an overall response rate of 53.6% for Wave 1 and 59.8% for Wave 2, and reported that there was limited bias in the data at this response rate. In Table 1, we report the percentage of students across disability labels who took the Direct Assessment (versus those whose teachers completed the SIB-R). As shown in Table 1, there was variability across categories with students with learning disabilities, emotional disturbance, other health impairments, and speech language impairments having the highest level of participation and students with autism, multiple disabilities, and deaf-blindness the lowest participation levels. Based on our preliminary analyses, each disability group had sufficient numbers to be included. However, it is important to note that the included students do not represent the entire population of students with these labels, but the subset that were deemed able to participate in the Direct Assessment.

Self-Determination Assessment

The Direct Assessment included a subset of questions from *The Arc's Self-Determination*

Scale (SDS, Wehmeyer & Kelchner, 1995). The SDS is based on the functional theory of self-determination (Wehmeyer, 2003) and is a 72-item self-report measure that provides data on self-determination through the measurement of the four essential characteristics of self-determined behavior: autonomy, self-regulation, psychological empowerment, and self-realization (Wehmeyer, 1996a). Subscale scores can be calculated for these four characteristics, as well as a total self-determination score. The SDS was developed and normed with 500 adolescents with cognitive disabilities (Wehmeyer, 1996c). It was demonstrated to have adequate reliability and validity in the measurement of self-determination. It is the most widely used assessment of global self-determination in the disability field, and has demonstrated good internal consistency across multiple studies with diverse disability populations, including intellectual disability, learning disabilities, physical disabilities, emotional disturbances, speech impairments, other health impairments, and autism. (Lee et al., 2011; McDougall, Evans, & Baldwin, 2010; Shogren et al., 2007). Subsequent research (Shogren, Lopez et al., 2006; Shogren, Wehmeyer et al., 2006) has verified the proposed theoretical structure of The Arc's Self-Determination Scale, (i.e., four related, but distinct latent constructs [autonomy, self-regulation, psychological empowerment, and self-realization] that contribute to a higher-order self-determination construct). The 26 items included in NLTS2 were sampled from three of the four subscales of the SDS: autonomy (15 of 32 items), psychological empowerment (6 of 16 items), and self-realization (5 of 15 items).

Analytic Procedure

Research Question 1. Because only three of the four subscales were measured in NLTS2, we conceptualized self-determination at the subscale level focusing on autonomy, psychological empowerment, and self-realization. To explore the first research question, we first conceptually reviewed the subset of items included from each of the three subscales with the lead

author of *The Arc's Self-Determination Scale* (Wehmeyer & Kelchner, 1995) and determined there was sufficient coverage of the content of the original subscales to proceed. Next, we subjected the three subscales to a Confirmatory Factor Analysis (CFA) on the entire Direct Assessment sample (disability groups collapsed) in order to confirm that the overall model fit well and to explore factor and correlation structures to ensure the necessary preconditions for parceling (Cheung & Rensvold, 2002; Little, Cunningham, Shahar, & Widaman, 2002; Little, Rhemtulla, Gibson, & Schoemann, in press). Next, a parceled model was constructed and tested for use in all subsequent multiple group comparisons.

Parceling is the mean aggregation of two or more indicators for the purpose of creating more parsimonious, just-identified CFA models (Little et al., 2002). With documented precautions accounted for (e.g., unidimensionality and uncorrelated variances), parceling has psychometric benefits such as improved reliability and relationships between variables as well as closer approximations to normality (Brown, 2006). Parceling is an appropriate method to use when the focus of a study is on the overall construct differences (e.g., mean level differences in psychological empowerment versus autonomy) and not on the individual item-level differences between groups (e.g., specific items from psychological empowerment subscale; Little et al., 2002, in press). We parceled the items by counter balancing based on factor loadings in the initial model. For example, the six items under Psychological Empowerment were grouped into three, two-item parcels by matching the highest loading item with the lowest item until all items were combined resulting in three parcels per latent variable (Little et al., 2002).

Research Question 2. Research question 2 was concerned with establishing measurement equivalence and exploring latent differences in the measurement of the self-determination constructs in youth across the 12 disability categories represented in NLTS2. We

used structural equation modeling (SEM), specifically multiple-group confirmatory factor analysis based on the Means and Covariance Structures (MACS) model (Little, 1997). SEM procedures involve the integration of measurement models, which specify the relationships among latent and observed variables, with structural models, which specify the relationship between latent factors. First, we examined whether measurement equivalence existed across disability groups. Measurement invariance indicates that the same construct is being measured in each of the 12 disability groups, such that when the relative fit is compared, proportional equality exists across groups for the patterns of fixed and free parameters, the factor loadings, and the factor intercepts (Little, 1997, in press). Measurement invariance is tested in three steps. First, configural invariance is tested by constraining all groups to have the same pattern of fixed and free parameters. Second, the model is further constrained to test for weak factorial invariance by equating factor loadings across all groups. Third, strong metric invariance is tested by equating indicator means. We evaluated each step of invariance using relative change in the comparative fit index (CFI). If CFI changes are less than .01 between each nested model test, invariance is supported (Chueng & Rensvold, 2002; Little, in press).

After establishing strong factorial invariance, structural models can be evaluated to explore similarities and differences in the latent means, variances, and correlations across the disability groups (Little, 1997). For the latent variable tests, absolute fit is compared using adjusted chi-square difference tests as the measure of invariance. With this sample size, a *p*-value of .005 was used to determine significance. Because of the number of parameters to be tested, we developed conceptual groupings of disability categories to test for invariance in latent means, variances, and correlations. The conceptual groupings were developed based on a review of descriptive data on the 26 indicators broken down by disability category, literature on the impact

of disability category on self-determination, and literature on disability characteristics. The three groups were: (a) "high incidence disability group" (learning disability, other health impairment, emotional disturbance, and speech or language impairment), (b) "cognitive disability group" (autism, intellectual disability, deaf-blindness, multiple disabilities, and traumatic brain injury), and (c) sensory and physical disabilities group (visual impairment, hearing impairment, and orthopedic impairment). It is important to note that the hypothesized groups served only as a guide, and were systematically tested to explore the degree they matched the data.

Results

Research Question 1

The first research question explored the aspects of self-determination measured by NLTS2 to develop a framework for conceptualizing self-determination. Because only a subset of items from three of the four subscales of *The Arc's Self-Determination Scale* was represented in the data, we conceptualized and tested a three construct model – autonomy, self-realization, and psychological empowerment. We first examined an unparceled model, then a parceled model. All analyses were conducted in Mplus, version 6.12 (Muthen & Muthen, 1998-2010) using the "type=complex" option, "wt_na" sampling weight, stratum and cluster to account for the complex sampling design. The preliminary non-parceled CFA involved categorical items; therefore, the means and variances adjusted weighted least squares estimator (WLSMV) was used. For the final models using parceled items, the indicators are continuous variables and robust maximum-likelihood (MLR) was used. The preliminary, collapsed, non-parceled confirmatory factor analysis yielded good fit indices for the overall model ($\chi^2_{(295,\ n=5140)}$ = 528.719, RMSEA = 0.012 $_{(0.011,\ 0.014)}$, NNFI = 0.923, CFI = 0.931). Recommendations for acceptable model fit are an absolute fit index of root mean square error of approximation

(RMSEA) less than .08 (i.e., as close to zero as possible), and relative fit indices of non-normed fit index (NNFI) and comparative fit index (CFI) of .90 or greater for acceptable fit (i.e., as close to 1.00 as possible) (Little, in press).

The parceled model also showed strong fit ($\chi^2_{(17, n=5130)} = 13.611$, RMSEA = 0.000 $_{(0.000, 0.010)}$, NNFI = 1.004, CFI = 1.000). Due to improved psychometric properties of parceled models, improved model fit is generally expected and was confirmed in this analysis. With both the unparceled and parceled models showing acceptable fit, we chose to use the parceled model.

Research Question 2

To explore measurement invariance across the 12 groups represented in NLTS2, we followed the procedures described in the Method section. As shown in the first section of Table 2, the initial freely estimated model fit the data well ($\chi 2_{(204, n = 5130)} = 372.631$, RMSEA = 0.039 $_{(0.032, 0.046)}$, NNFI = 0.958, CFI = 0.972). Systematic constraints were applied across loadings and intercepts with no significant differences among the 12 disability groups detected. In the event that the change in CFI equaled 0.01, we verified that the constructs were indeed invariant by examining whether the nested models fall within the 90% confidence interval of the previous model using the RMSEA (Little, in press). As shown in the first section of Table 2, CFI changes were less than .01 and/or nested models fell within the 90% CI of the RMSEA for each nested model test, so invariance is assumed. This trivial change in fit suggests that across all 12 disability categories, the same constructs – autonomy, psychological empowerment, and self-realization – are being measured and differences related to latent means, variances, and covariances can be examined. Table 3 provides the loadings and intercepts for the strong invariant model.

Next, we tested for homogeneity of latent variances and covariances/correlations and

equality of latent means across groups in sequential steps. As shown in the bottom portion of Table 2, initial testing constraining across all groups yielded significant differences in the latent variances and covariances/correlations ($p < .005$). However, when decomposing differences, we found that the differences were concentrated in the latent variances and that the latent correlations did not significantly differ from each other ($\chi 2_{(15, n=5130)} = 14.77$, p=0.47.). The common correlations among the constructs for all disability groups were: autonomy and self-realization ($r = .69$), autonomy and psychological empowerment ($r = .48$), and psychological empowerment and self-realization ($r = .66$). When looking at differences in the latent means, we found significant differences ($p < .005$).

To understand the pattern of differences in the latent variances and latent means, we systematically tested the impact of adding or freeing latent constraints across the 12 disability groups using the hypothesized disability groupings described in the Method section. These sequential steps were used to establish a structural model representing the latent differences in autonomy, self-realization, and psychological empowerment. As shown in Table 4, our hypothesized high incidence disability group (learning disabilities, other health impairments, emotional disturbances, and speech and language impairments) was supported by the data. Essentially, there were no differences between these disability categories in the structural models (i.e., latent means and variances did not significantly differ from each other). However, the hypothesized cognitive disability and sensory and physical disabilities groups were only partially supported. In the cognitive disability group, students with autism, deaf-blindness, and multiple disabilities could be collapsed into a single group. However, students with traumatic brain injury (means and variance structure, $p < .005$) and intellectual disability (means only, $p < .005$) demonstrated significant differences. We tested if either group could be collapsed with other

groups (e.g., high incidence), and they could not. Similarly, in the sensory and physical disability groups, we found that while students with visual and hearing impairments could be collapsed, students with orthopedic impairments did not fit within this group or with any other disability group. Orthopedic impairments, traumatic brain injury, and intellectual disability did not pass equivalence testing in any configuration and thus were allowed to vary in the final model.

Table 4 provides the latent means and variances for the six collapsed disability groups. With the exception of the traumatic brain injury category for the psychological empowerment construct, all groups differed significantly from the reference group – high incidence disabilities – in the latent variances. This finding indicates that the distribution of scores for each of the latent constructs differed across the six groups. Interestingly, for latent means there were fewer significant differences; the only significant differences were between the reference group and students with intellectual disability and cognitive disabilities (autism, multiple disabilities, deaf-blindness) for the psychological empowerment variable, with these students showing significantly lower levels of psychological empowerment.

Discussion

The present study explored two main research questions: (a) What aspects of self-determination were measured in NLTS2? and (b) Can measurement equivalence be established and are there latent differences in the self-determination constructs across the 12 disability groups included in NLTS2? In this section, we discuss the findings related to these two research questions, limitations of the study, and directions for future research and practice.

Measurement of Self-Determination in NLTS2

Because only a subset of items from three of the four subscales of *The Arc Self-Determination Scale* were included in NLTS2, careful attention must be directed to how these

items are used to describe "self-determination." In reviewing the included items, it became clear that the overall construct of self-determination as described and empirically validated in the functional theory (Shogren et al., 2008; Wehmeyer, 2003) was not captured in NLTS2. In our analyses we chose to use a three construct representation of the included items. This limited three construct representation is conceptually and psychometrically sound, and the results suggest it is justifiable for researchers to use the constructs of autonomy, psychological empowerment, and self-realization. However, future research should systematically explore the specific aspects of autonomy, psychological empowerment and self-realization being assessed in NLTS2.. Although it is not possible with the current data, direct comparisons of included versus non-included items on the range of scores must be assessed in future research.

Furthermore, because a subset of items was included, we recommend that researchers be cautious in interpreting the sum of the responses to individual items as representative of the constructs of autonomy, psychological empowerment, self-realization, or overall self-determination. Instead, when using structural equation modeling, our analyses suggest the validity of using parcels of items to represent the latent constructs. Given that parceling reduces the random error and specific components of the item's variance, an individual item score is less reliable than aggregate scores (Little et al., 2002; Little et al., in press). Also, the use of parcels leads to more parsimonious models (fewer estimated parameters), and have fewer chances for residuals to be correlated or dual loadings to emerge. Bandalos (2002) argues that the use of parcels results in lower levels of nonnormality, better fitting solutions, lower Type I error rate, and less biased results in the presence of coarsely categorized items. When using more traditional analytic approaches, researchers must be cautious in interpreting summed scores of the items included in NLTS2. Focusing on specific items as outcome variables, or on the pattern

of relationships between summed scores and other variables, rather than the summed scores themselves will be necessary.

Measurement Equivalence and Latent Differences

Despite the fact that only three of the four essential characteristics of self-determination were measured in the NLTS2 study, the data provide an unprecedented opportunity to understand the autonomy, psychological empowerment, and self-realization of a nationally representative sample of students with disabilities. When the impact of disability on the three construct representation of self-determination was examined, strong metric equivalence was established across the 12 disability groups. These results suggest that, in the sample of students who participated in the Direct Assessment and were capable of providing meaningful responses to the self-report questions, the same self-determination constructs were being measured and the same items can be used to define the constructs for each disability group.

After establishing that the same items could be used to measure the constructs across the 12 groups, we were able to explore latent differences. First, we looked across the 12 disability groups to explore the degree to which disability groups could be collapsed in the structural models. When groups can be collapsed it indicates that the latent means, variances, and covariances/correlations do not significantly differ from each other. We found that the correlations did not vary across any of the disability groups, indicating the same pattern of relationships among the constructs across disability groups. The correlations among constructs ranged from .48 to .69, indicating moderate to strong relationships. The relationship between autonomy and psychological empowerment was slightly lower than the relationship between the other autonomy and self-realization and self-realization and psychological empowerment. These correlations are consistent with previous research on *The Arc's Self-Determination Scale*

suggesting moderate to strong correlations (Shogren et al., 2008), but clear differentiation.

However when exploring differences in each construct individually (i.e., latent variances and means), we did find significant differences across disability groups. When attempting to determine which disability groups showed similar patterns of findings in latent variances and means, a "high incidence disability" group emerged, including students with learning disabilities, emotional disturbances, other health impairments, and speech language impairments. Students with intellectual disability did not fit with this group, nor did they fit with the "cognitive disabilities" group that emerged (i.e., autism, deaf-blindness, multiple disabilities). These findings are congruent with other research that has suggested greater social and behavioral similarities among students with learning disabilities and emotional and behavioral disorders than with students with mild intellectual disability (Sabornie, Cullinan, Osborne, & Brock, 2005; Sabornie, Evans, & Cullinan, 2006), but differ from research with high school students with learning disabilities and emotional disturbance that has suggested specific behavioral and social skill differences (Lane, Carter, Pierson, & Glaeser, 2006). However, none of these studies have specifically looked at self-determination, nor have they included all disability groups represented in IDEA. Our findings suggest that students with high incidence disabilities - learning disability, emotional or behavioral disorder, speech language impairment, and other health impairments – tend to show more similarities than differences. However, students with intellectual disability show significant differences from this group of students, as well as from students with low incidence disabilities.

There was less congruence in the means and variances across students with labels that are traditionally viewed as lower incidence. A group of students with autism, deaf-blindness, and multiple disabilities emerged. We called this group a "cognitive disability group," however,

would emphasize that since data collection began for NLTS2 in 2000, the population of students that have a label of autism likely has shifted significantly and the group of students with autism included in NLTS2 may differ significantly from students with this label today. We chose to call this group a cognitive disability group because of work in the late 1990s and early 2000s suggesting the high incidence of intellectual disability in individuals with autism (National Research Council, 2001) and with multiple disabilities and deaf-blindness (Orelove, Sobsey, & Silberman, 2004). Interestingly, students with sensory disabilities – visual and hearing impairments – formed their own group and we were unable to collapse them with any other group, suggesting specific differences based on the presence or absence of a sensory disability. This is congruent with research on other social and behavioral outcomes that suggests unique characteristics and experiences of students with sensory disabilities that must be considered (Algozzine & Ysseldyke, 2006) . Like students with intellectual disability, students with orthopedic impairments and traumatic brain injury also did not fit with any of the groupings. Research is needed to better understand and explore factors that contribute to these differences and unique profiles, particularly given the implications for interventions to promote self-determination. While a number of curricula have been developed, rarely have they specifically addressed support needs for students with diverse disabilities. Further research is needed to explore factors that interact with disability and impact support need and self-determination.

When looking at the specific pattern of differences across the combined disability groups, it is important to note that the differences were concentrated in the latent variances of the constructs, rather than in the latent means. As shown in Table 4, the only differences in latent means for were for the psychological empowerment construct, with students with intellectual disability and cognitive disabilities scoring significantly lower than the reference group of

students with high incidence disabilities. These findings are congruent with previous research suggesting that students with intellectual disability often are less empowered than their peers with other disabilities (Shogren, Bovaird, Palmer, & Wehmeyer, 2010), perhaps because of low expectations and limited ability to exert control over their environment (Stancliffe, 1997, 2001). However, unlike previous research which has documented mean level differences in overall self-determination across specific disability groups, namely students with intellectual and learning disability (Shogren et al., 2007; Wehmeyer & Garner, 2003; Williams-Diehm et al., 2008), our findings did not suggest mean level differences for the autonomy and self-realization construct. A possible explanation for this finding is the significant differences across all groups and constructs in the latent variances, with the exception of psychological empowerment for students with traumatic brain injury. The latent variance differences indicate that the distribution of scores within the different disability groups vary significantly. It is possible that previous findings suggesting mean level differences had more homogeneous samples resulting from sampling a restricted number of districts, teachers, and classroom settings. It is also possible that previous work did not capture the full range of variation within disability groups. The differences in the latent variances suggest that disability alone is not able to account for all of the variability in student autonomy, self-realization and psychological empowerment scores, and that other personal and environmental factors must be considered. Further research is needed that explores more complex models of personal (e.g., support need, social skills and supports) and environmental (e.g., opportunities for self-determination, inclusion, access to the general curriculum) factors that interact with disability to influence student's relative levels of self-determination. Understanding the impact of disability is a first step, but as our findings suggest, that there is more variability that needs to be accounted for to fully understanding autonomy,

self-realization, and psychological empowerment in students with disabilities.

Limitations of the Study

NLTS2 provides useful information on the autonomy, self-realization, and psychological empowerment of students with disabilities across the nation. However, there are limitations that must be considered in interpreting the data. First, as mentioned above, it is problematic that only a subset of items from three of the four subscales of *The Arc's Self-Determination Scale* were included in the Direct Assessment. This creates issues in interpreting the constructs that were measured. However, given the breadth of data collected for NLTS2, there were likely time and resource constraints that were reconciled by truncating the original measure. In future research, it may be useful to use a systematic, data-based process for identifying the subset of items most representative of the assessment. Second, only a subset of the overall NLTS2 sample participated in the Direct Assessment, and some students participated in an alternative process because they were unable to complete *The Arc's Self-Determination Scale*. As shown in Table 1, for some groups (autism, multiple disabilities) only slightly over 50% of the sample participated in the Direct Assessment. Thus, the data is not representative of the entire population of students with disabilities, but only those deemed capable of participating in the Direct Assessment. This is an inherent problem in assessing self-determination, as with current measures students must be able to reliably respond to complex questions.

Data on student's disability category came from the school districts and was based on the primary disability category under which students received services; there is no way to account for school, district, and state variations in disability classification nor is there any way to verify the accuracy of diagnoses. Questions could be raised about the specific characteristics of students with, say multiple disabilities or deaf-blindness, who were able to participate in the Direct

Assessment. However, considering the size of the sample and the consideration given to sampling to ensure representativeness, this data clearly has power to inform our understanding of autonomy, self-realization, and psychological empowerment in students with diverse disabilities who are able to participate in Direct Assessment.

Directions for Future Research and Practice

While this study provides initial insight into the autonomy, self-realization, and psychological empowerment of a nationally representative sample of students with disabilities, more work is needed to understand these complex constructs and their application in practice. Additional research is also needed on the assessment of self-determination. Clearly one finding of this study is that brief measures of self-determination may be useful in both research and practice. Work is needed to develop these measures in a conceptually and statistically sound manner. The development of such measures has the potential to enable teachers to quickly and efficiently assess student self-determination prior to and after interventions are implemented. Existing brief measures of self-determination can serve as a starting point (Wehmeyer, Little, Lopez, & Shogren, 2011). Work is also needed on assessing the self-determination of individuals with severe disabilities who are not able to complete self-report measures, as well as on strategies that teachers can use to support students with severe disabilities to develop these skills. Different approaches, such as observational systems, may provide a means to understand self-determination in this population.

In practice, the results suggest the importance of assessing self-determination prior to implementing interventions to support self-determination. Given the variability in self-determination scores across disability groups, when working with students to support self-determination, assessment data would provide teachers with a mechanism to understand the

impact of the intervention, and engage in data-based decision making. Promoting teacher's knowledge and use of self-determination assessments and developing frameworks to link assessment data to instructional practices are needed. The results of this study provide a starting point. Students with learning disabilities, emotional and behavioral disorders, speech or language impairments, and other health impairments may have more commonalities in their relative levels of self-determination in high school than students from other disability groups. In practice, this provides important information that teachers can use in the process of selecting self-determination interventions based on knowledge of disability characteristics and assessment data. For example, the *Self-Advocacy Strategy* (Van Reusen, Bos, Schumaker, & Deshler, 1994) was developed and has been demonstrated to increase participation in IEP meetings for students with learning disabilities (Van Reusen & Bos, 1994) as well as with students with other high incidence disabilities (emotional and behavioral disorders, Test & Neale, 2004), and may have benefits for students in the high incidence group that emerged in these analyses. When considering interventions with students with intellectual disability or cognitive disabilities, the development and implementation of interventions that specifically target psychological empowerment may be important. Curricula that have been developed with the needs of this population in mind and that have activities that focus on building advocacy sills and feeling of empowerment, such as *Whose Future is it Anyway?* (Wehmeyer et al., 2004) may address these issues. In practice, self-determination interventions should be selected based on a number of factors, including student, school, and classroom characteristics and needs. This study suggests that disability is one factor that should be considered in making these decisions, and highlights the importance of assessment and the systematic consideration of personal characteristics by practitioners working to meaningfully assess and promote self-determination for all students.

References

Agran, M., Hong, S., & Blankenship, K. (2007). Promoting the self-determination of students with visual impairments: Reducing the gap between knowledge and practice. *Journal of Visual Impairment and Blindness, 101*, 453-464.

Algozzine, B., Browder, D., Karvonen, M., Test, D. W., & Wood, W. M. (2001). Effects of interventions to promote self-determination for individuals with disabilities. *Review of Educational Research, 71*, 219-277. doi: 10.3102/00346543071002219

Algozzine, B., & Ysseldyke, J. (2006). *Teaching students with sensory disabilities*. Thousand Oaks, CA: Corwin.

Arndt, S. A., Konrad, M., & Test, D. W. (2006). Effects of the Self-Directed IEP on student participation in planning meetings. *Remedial and Special Education, 27*, 194-207. doi: 10.1177/07419325060270040101

Bandalos, D. L. (2002). The effects of item parceling on goodness-of-fit and parameter estimate bias in structural equation modeling. *Structural Equation Modeling, 9*, 78-102. doi: 10.1207/S15328007SEM0901_5

Bruininks, R. H., Woodcock, R. W., Weatherman, R. F., & Hill, B. K. (1996). *Scales of Independent Behavior-Revised*. Itasca, IL: Riverside Publishing.

Calkins, C., Wehmeyer, M., Bacon, A., Heller, T., & Walker, H. M. (2011). Introduction to the special issue on scaling up efforts to promote the self-determination of people with developmental disabilities. *Exceptionality, 19*, 2-5. doi: 10.1080/09362835.2011.537219

Carter, E. W., Trainor, A., Owens, L., Sweden, B., & Sun, Y. (2010). Self-determination prospects of youth with high-incidence disabilities: Divergent perspectives and related

factors. *Journal of Emotional and Behavioral Disorders, 18,* 67-81. doi: 10.1177/1063426609332605

Chadsey-Rusch, J., Rusch, F. R., & O'Reilly, M. (1991). Transition from school to integrated communities. *Remedial and Special Education, 12*, 23-33. doi: 10.1177/074193259101200605

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling, 9*, 233-255. doi: 10.1207/S15328007SEM0902_5

Cobb, R. B., Lehmann, J., Newman-Gonchar, R., & Alwell, M. (2009). Self-determination for students with disabilities: A narrative metasynthesis. *Career Development for Exceptional Individuals, 32*, 108-114. doi: 10.1177/0885728809336654

Hasazi, S. B., Gordon, L. R., & Roe, C. A. (1985). Factors associated with the employment status of handicapped youth exiting high school from 1979 to 1983. *Exceptional Children, 51*, 455-469.

Hughes, C., Kim, J.-H., Hwang, B., Killian, D. J., Fischer, G. M., Brock, M. L., . . . Houser, B. (1997). Practitioner-validated secondary transition support strategies. *Education & Training in Mental Retardation & Developmental Disabilities, 32*, 201-212.

Javitz, H., & Wagner, M. (2005). Analysis of potential bias in the Wave 1 and Wave 2 respondents to the National Longitudinal Transition Study-2 (NLTS2). Menlo Park, CA: SRI International.

Konrad, M., Fowler, C. H., Walker, A. R., Test, D. W., & Wood, W. M. (2007). Effects of self-determination interventions on the academic skills of students with learning disabilities. *Learning Disability Quarterly, 30,* 89-113. doi: 10.2307/30035545

Lane, K. L., Carter, E. W., Pierson, M. R., & Glaeser, B. C. (2006). Academic, social, and behavioral characteristics of high school students with emotional disturbances or learning disabilities. *Journal of Emotional and Behavioral Disorders, 14*, 108-117. doi: 10.1177/10634266060140020101

Lee, Y., Wehmeyer, M. L., Palmer, S. B., Williams-Diehm, K., Davies, D. K., & Stock, S. E. (2011). The effect of student-directed transition planning with a computer-based reading support program on the self-determination of students with disabilities. *The Journal of Special Education, 45*(2), 104-117. doi: 10.1177/0022466909358916

Lee, Y., Wehmeyer, M. L., Palmer, S. B., Williams-Diehm, K., Davies, D. K., & Stock, S. E. (2012). Examining individual and instruction-related predictors of the self-determination of students with disabilities: Multiple regression analyses. *Remedial and Special Education, 33*, 150-161. doi: 10.1177/0741932510392053

Little, T. D. (1997). Mean and covariance structures (MACS) analyses of cross-cultural data: Practical and theoretical issues. *Multivariate Behavioral Research, 32*, 53-76. doi: 10.1207/s15327906mbr3201_3

Little, T. D. (in press). *Longitudinal structural equation modeling*. New York: Guilford Press.

Little, T. D., Cunningham, W. A., Shahar, G., & Widaman, K. F. (2002). To parcel or not to parcel: Exploring the question, weighing the merits. *Structural Equation Modeling, 9*, 151-173. doi: doi:10.1207/S15328007SEM0902_1

Little, T. D., Rhemtulla, M., Gibson, K., & Schoemann, A. M. (in press). Why the items versus parcels controversy needn't be one. *Psychological Methods*.

Martin, J. E., Van Dycke, J. L., Christensen, W. R., Greene, B. A., Gardner, J. E., & Lovett, D. L. (2006). Increasing student participation in IEP meetings: Establishing the self-directed IEP as an evidenced-based practice. *Exceptional Children, 72*, 299-316.

McDougall, J., Evans, J., & Baldwin, P. (2010). The importance of self-determination to perceived quality of life for youth and young adults with chronic conditions and disabilities. *Remedial and Special Education, 31*, 252-260. doi: 10.1177/0741932509355989

Mithaug, D. E., Horiuchi, C. N., & Fanning, P. N. (1985). A report on the Colorado statewide follow-up survey of special education students. *Exceptional Children, 51*, 397-404.

National Research Council. (2001). *Educating children with autism*. Washington, DC: National Academies Press.

Nota, L., Ferrari, L., Soresi, S., & Wehmeyer, M. (2007). Self-determination, social abilities and the quality of life of people with intellectual disability. *Journal of Intellectual Disability Research, 51*, 850-865. doi: 10.1111/j.1365-2788.2006.00939.x

Orelove, F. P., Sobsey, D., & Silberman, R. K. (2004). *Educating Children with Multiple Disabilities: A Collaborative Approach*. Baltimore: Brookes.

Palmer, S. B., Wehmeyer, M. L., Gipson, K., & Agran, M. (2004). Promoting access to the general curriculum by teaching self-determination skills. *Exceptional Children, 70*, 427-439.

Sabornie, E. J., Cullinan, D., Osborne, S. S., & Brock, L. B. (2005). Intellectual, academic, and behavioral functioning of students with high-incidence disabilities: A cross-categorical meta-analysis. *Exceptional Children, 72*, 47-63.

Sabornie, E. J., Evans, C., & Cullinan, D. (2006). Comparing characteristics of high-incidence disability groups: A descriptive review. *Remedial and Special Education, 27,* 95-104. doi: 10.1177/07419325060270020701

Shogren, K. A., Bovaird, J. A., Palmer, S. B., & Wehmeyer, M. L. (2010). Examining the development of locus of control orientations in students with intellectual disability, learning disabilities, and no disabilities: A latent growth curve analysis. *Research and Practice for Persons with Severe Disabilities, 35,* 80-92.

Shogren, K. A., Palmer, S. B., Wehmeyer, M. L., Williams-Diehm, K., & Little, T. D. (2012). Effect of intervention with the Self-Determined Learning Model of Instruction on access and goal attainment. *Remedial and Special Education, 33,* 320-330. doi: 10.1177/0741932511410072

Shogren, K. A., Wehmeyer, M. L., Palmer, S. B., Soukup, J. H., Little, T. D., Garner, N., & Lawrence, M. (2007). Examining individual and ecological predictors of the self-determination of students with disabilities. *Exceptional Children, 73,* 488-509.

Shogren, K. A., Wehmeyer, M. L., Palmer, S. B., Soukup, J. H., Little, T. D., Garner, N., & Lawrence, M. (2008). Understanding the construct of self-determination: Examining the relationship between The Arc's Self-Determination Scale and the AIR Self-Determination Scale. *Assessment for Effective Intervention, 33,* 94-107. doi: 10.1177/1534508407311395

Sitlington, P. L., & Frank, A. R. (1990). Are adolescents with learning disabilities successfully crosssing the bridge into adult life? . *Learning Disability Quarterly, 13,* 97-111. doi: 10.2307/1510654

SRI International. (2000). National Longitudinal Transition Study-2 (NLTS2): Study design, timeline and data collection plan. Menlo Park, CA: Author.

Stancliffe, R. J. (1997). Community living-unit size, staff presence, and residents' choice-making. *Mental Retardation, 35*, 1-9. doi: 10.1352/0047-6765(1997)035<0001:CLSSPA>2.0.CO;2

Stancliffe, R. J. (2001). Living with support in the community: Predictors of choice and self-determination. *Mental Retardation and Developmental Disabilities Research Reviews, 7*, 91-98. doi: 10.1002/mrdd.1013

Test, D. W., & Neale, M. (2004). Using the Self-Advocacy Strategy to increase middle graders' IEP participation. *Journal of Behavioral Education, 13*, 135-145. doi: 10.1023/B:JOBE.0000023660.21195.c2

Thoma, C. A., Baker, S. R., & Saddler, S. J. (2002). Self-determination in teacher education: A model to facilitate transition planning for students with disabilities. *Remedial and Special Education, 23*, 82-89. doi: 10.1177/074193250202300204

Van Reusen, A. K., & Bos, C. S. (1994). Facilitating student participation in the individualized education programs through motivation strategy instruction. *Exceptional Children, 60*, 466-475.

Van Reusen, A. K., Bos, C. S., Schumaker, J. B., & Deshler, D. D. (1994). *The self-advocacy strategy for education and transition planning*. Lawrence, KS: Edge Enterprises, Inc.

Wagner, M., Newman, L., Cameto, R., & Levine, P. (2006). The Academic Achievement and Functional Performance of Youth With Disabilities. A Report of Findings from the National Longitudinal Transition Study-2 (NLTS2). Menlo Park, CA: SRI International.

Walker, H. M., Calkins, C., Wehmeyer, M. L., Walker, L., Bacon, A., Palmer, S. B., . . . Johnson, D. R. (2011). A social-ecological approach to promote self-determination. *Exceptionality, 19*, 6-18. doi: 10.1080/09362835.2011.537220

Wehman, P. (2006). *Life beyond the classroom: Transition strategies for young people with disabilities* (4th ed.). Baltimore, MD: Brookes.

Wehmeyer, M. L. (2003). A functional theory of self-determination: Model overview. In M. L. Wehmeyer, B. Abery, D. E. Mithaug & R. Stancliffe (Eds.), *Theory in self-determination: Foundations for educational practice*. Springfield, IL: Charles C. Thomas Publishing Company.

Wehmeyer, M. L., Abery, B. H., Zhang, D., Ward, K., Willis, D., Hossain, W. A., . . . Walker, H. M. (2011). Personal self-determination and moderating variables that impact efforts to promote self-determination. *Exceptionality, 19*, 19-30. doi: 10.1080/09362835.2011.537225

Wehmeyer, M. L., & Garner, N. W. (2003). The impact of personal characteristics of people with intellectual and developmental disability on self-determination and autonomous functioning. *Journal of Applied Research in Intellectual Disabilities, 16*, 255-265. doi: 10.1046/j.1468-3148.2003.00161.x

Wehmeyer, M. L., & Kelchner, K. (1995). *The Arc's Self-Determination Scale*. Arlington, TX: The Arc National Headquarters.

Wehmeyer, M. L., Lawrence, M., Kelchner, K., Palmer, S. B., Garner, N., & Soukup, J. (2004). *Whose future is it anyway? A student-directed transition planning process.* . Lawrence, KS: Beach Center on Disability and Kansas University Center on Developmental Disabilities.

Wehmeyer, M. L., Little, T. D., Lopez, S. J., & Shogren, K. A. (2011). *Adolescent Self-Determination Assessment-Short Form*. Lawrence, KS: Kansas University Center for Developmental Disabilities.

Wehmeyer, M. L., & Palmer, S. B. (2003). Adult outcomes for students with cognitive disabilities three-years after high school: The impact of self-determination. *Education and Training in Developmental Disabilities, 38*, 131-144.

Wehmeyer, M. L., & Schwartz, M. (1997). Self-determination and positive adult outcomes: A follow-up study of youth with mental retardation or learning disabilities. *Exceptional Children, 63*, 245-255.

Wehmeyer, M. L., & Shogren, K. A. (2008). Self-determination and learners with autism spectrum disorders. In R. L. Simpson & B. S. Myles (Eds.), *Educating children and youth with autism* (2nd ed., pp. 433-476). Austin, TX: Pro-Ed.

Wehmeyer, M. L., Shogren, K. A., Zager, D., Smith, T. E. C., & Simpson, R. (2010). Research-based principles and practices for educating students with autism: Self-determination and social interactions. *Education and Training in Autism and Developmental Disabilities, 45*, 475-486.

Williams-Diehm, K., Wehmeyer, M. L., Palmer, S. B., Soukup, J., & Garner, N. (2008). Self-determination and student involvement in transition planning: A multivariate analysis. *Journal on Developmental Disabilities, 14*, 27-39.

Wood, W. M., Fowler, C. H., Uphold, N., & Test, D. W. (2005). A review of self-determination interventions with individuals with severe disabilities. *Research and Practice for Persons with Severe Disabilities, 30*, 121-146. doi: 10.2511/rpsd.30.3.121

Table 1

Percentage of Students by Disability Category who completed the Direct Assessment

Disability Label	**Percentage of Students**
Autism	58%
Deafblindness	66%
Emotional Disturbance	96%
Hearing Impairment	93%
Intellectual Disability	77%
Learning Disability	98%
Multiple Disabilities	52%
Orthopedic Impairments	85%
Other Health Impairments	96%
Speech Language Impairment	98%
Traumatic Brain Injury	92%
Visual Impairment	80%

Table 2

Invariance Testing for Alternative Null Model: Santorro-Bentler Correction for MLR

Invariance/equality test	χ^2	df	RMSEA	90% CI	CFI	NNFI	S-B χ^2	S-B P-Value
Measurement invariance								
Configural	372.631	227	0.039	0.032 -0.046	0.972	0.958		
Loadings	395.548	260	0.035	0.028 -0.042	0.974	0.966		
Intercepts	526.425	315	0.04	0.034 -0.045	0.959	0.956		
Tests of Latent Parameters								
Homogeneity of var/cov	631.847	381	0.039	0.034 -0.045	0.951	0.957	105.706	0.001
Homogeneity of var/cov by Groups	615.07	375	0.039	0.033 -0.044	0.953	0.958	89.258	0.008
Latent Mean Invariance	700.044	348	0.049	0.043 -0.054	0.931	0.934	164.952	0.000
Latent Mean Invariance by Groups	552.136	327	0.04	0.034 -0.046	0.956	0.955	25.711	0.012

Table 3

Loading and Intercept Values for the Strong Metric Invariance Models

	Twelve Group Model	
	Estimate	
Indicator	Loading (SE)	Intercept (SE)
Autonomy		
Parcel 1	0.35 (0.02)	2.93 (0.03)
Parcel 2	0.33 (0.02)	3.02 (0.02)
Parcel 3	0.40 (0.02)	2.78 (0.03)
Self-Realization		
Parcel 1	0.42 (0.02)	3.11 (0.03)
Parcel 2	0.42 (0.02)	3.14 (0.03)
Psychological Empowerment		
Parcel 1	0.13 (0.02)	1.83 (0.01)
Parcel 2	0.12 (0.02)	1.91 (0.01)
Parcel 3	0.13 (0.02)	1.92 (0.01)

Table 4

Strong Metric Invariance Model Across Six Collapsed Disability Groups

Latent Variance and Mean Differences

	Groups	High Incidence	Sensory Disabilities	Intellectual Disability	Orthopedic Impairments	Cognitive Disabilities	Traumatic Brain Injury
AUT	Latent Variance Difference	1.000	1.073*	1.256*	1.078*	1.718*	0.976*
	Mean Difference	0.000	0.137	0.185	-0.154	-0.323	0.028
SREAL	Latent Variance Difference	1.000	0.841*	0.990*	0.857*	1.321*	0.769*
	Mean Difference	0.000	-0.001	-0.064	0.058	-0.288	0.027
PSYE	Latent Variance Difference	1.000	0.880*	1.402*	1.091*	1.587*	0.548
	Mean Difference	0.000	-0.156	-0.630*	-0.202	-0.915*	-0.186

*AUT = Autonomy, SREAL = Self-Realization, PSYE = Psychological Empowerment; *p < .005*