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Exploring Essential Characteristics of Self-Determination for Diverse Students Using Data From NLTS2

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Abstract

This study explored the impact of race/ethnicity on three of the four essential characteristics of self-determination—autonomy, self-realization, and psychological empowerment—directly assessed in the National Longitudinal Transition Study-2. Specifically, the impact of race/ethnicity was examined with six disability groups established in previous research: high incidence disabilities (learning disabilities, emotional disturbances, speech language impairments, and other health impairments), sensory disabilities (visual and hearing impairments), cognitive disabilities (autism, multiple disabilities, and deaf-blindness); intellectual disability, traumatic brain injury, and orthopedic impairments. Measurement equivalence was established across groups, but significant differences in the latent means, variances, and covariances were found suggesting a complex pattern of differences based on race/ethnicity within disability groups. Implications for future research and practice are discussed.

Keywords

self-determination, culture, NLTS2

Despite the attention directed to the importance of promoting self-determination in the field of special education and the emergence of research-based practices to teach the skills associated with self-determination (Algozzine, Browder, Karvonen, Test, & Wood, 2001; Cobb, Lehmann, Newman-Gonchar, & Alwell, 2009; Test et al., 2009), significant questions remain about the applicability of the self-determination construct to diverse youth with disabilities (Leake & Boone, 2007; Trainor, 2002). The influence of culture on self-determined behavior has begun to receive more attention in the literature (Shogren, 2011). Each student's personal culture is influenced by a number of factors, including gender, disability, race/ethnicity, language, and socioeconomic status (Trainor, Lindstrom, Simon-Burroughs, Martin, & Sorrells, 2008). Each of these factors has the potential to affect the manner in which students' express self-determined behavior, which has relevance for the design and implementation of self-determination interventions. For example, Shogren (2011) reviewed published studies on the relation between culture and self-determination. Ten empirical, theoretical, and review articles were identified that explored the application of self-determination to diverse cultures, including Diné (Navajo), Korean, and Japanese cultures as well as culturally and linguistically diverse youth within the United States. Across the articles, there was consensus that self-determination, as a construct, had relevance across diverse cultural contexts but the way self-determination behavior was operationalized may vary. For example, researchers suggested Diné (Navajo), Korean, and Japanese cultures may be more likely to focus on familial goals rather than individual goals.

One aspect of culture that has been directly explored by a small number of researchers is the influence of race/ethnicity on self-determination in youth within the United States. For example, Trainor (2005) interviewed European American, African American, and Hispanic youth with learning disabilities about their experiences with self-determination. She suggested there were "hints that participants with varying cultural identities perceive and experience self-determination differently, but these differences were difficult to capture because opportunities . . . were limited" (p. 243). Leake and Boone (2007) explored the perceptions of Black, Asian, Filipino, Hawaiian, Hispanic, Pacific

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Islander, and White youth with emotional and behavioral disorders. They found that while all racial and ethnic groups reported diverse cultural values, diverse youth were more likely to describe responsibility to their family as a key influence on their self-determined behavior.

These studies suggest that race/ethnicity may influence the expression of self-determined behavior. However, limited research has directly explored the relationship between race/ethnicity and student's self-reported level of self-determination. Reviews of the literature have found that race/ethnicity has not been consistently reported in the self-determination intervention literature, preventing the exploration of differences in self-determination status or outcomes (Wood, Fowler, Uphold, & Test, 2005). Understanding differences in student's relative levels of self-determination could further elucidate the influence of race/ethnicity on self-determination, broadening our understanding of personal and environmental factors that may influence self-determination. The purpose of this study, therefore, was to examine the extent to which race/ethnicity group differences exist on the aspects of self-determination measured in the National Longitudinal Transition Study-2 (NLTS2).

NLTS2 and Self-Determination

NLTS2 is a federally funded study designed to explore the secondary school and postschool experiences of a nationally representative sample of youth with disabilities. Data were collected from multiple sources over a 10-year period, including at one time point a Direct Assessment with a subset of items from *The Arc's Self-Determination Scale* (SDS; Wehmeyer & Kelchner, 1995), a widely used assessment of self-determination for students with disabilities. The data from NLTS2 provide a unique opportunity to explore the self-determination status of youth with disabilities across the nation. However, because only a subset of items from *The Arc's SDS* was included, it is not possible make inferences about the overall self-determination construct. In previous work using NLTS2 data (Shogren, Kennedy, Dowsett, & Little, in press), we established a framework for conceptualizing the self-determination assessment items included in NLTS2. Specifically, we did a conceptual review of the 26 items included in NLTS2 (of 72 items on the total scale). The items were sampled from three of the four subscales: Autonomy, Self-Realization, and Psychological Empowerment. It was determined that the data conceptually and empirically supported creating latent constructs for each of these three constructs. However, because the Self-Regulation subscale was not included at all, an overall self-determination construct was not justified.

After establishing the measurement framework—three latent constructs (autonomy, psychological empowerment, self-realization) representing three of the four essential characteristics of self-determination—Shogren et al. (in press) also examined differences across the 12 disability groups recognized in Individuals With Disabilities Education Act (IDEA). We found that the three constructs demonstrated measurement equivalence (i.e., could be measured with the same indicators) across the 12 groups, but that there were differences in the latent constructs, most notably in the latent variances. The 12 disability groups could be collapsed into six groups. Students with high incidence disabilities (learning disabilities, emotional disturbances, speech 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. Given that the differences were concentrated in the latent variances, this suggests that disability label influences self-determination, but that other personal and environmental factors also influence students' relative levels of self-determination.

Present Study

The purpose of the present study, therefore, was to explore the potential importance of another personal factor—race/ethnicity—on the self-reported autonomy, self-realization, and psychological empowerment of students across the six disability groups identified in Shogren et al. (in press). Specifically, we were interested in examining the following research questions:

Research Question 1: Can the latent constructs of autonomy, self-realization, and psychological empowerment be measured equivalently (i.e., invariance of the loadings and intercepts) in White, African American, and Hispanic students in the six disability groups identified by Shogren et al. (in press)—high incidence, cognitive disabilities, sensory disabilities, intellectual disability, traumatic brain injury, and orthopedic impairments?

Research Question 2: Are there differences in the latent means, variances, and/or covariances for students who are Caucasian, African American, and Hispanic within the six disability groups?

Method

NLTS2

As mentioned previously, the NLTS2 was a federally funded study to explore the secondary and postschool experiences of students with disabilities (Wagner, Newman, Cameto, & Levine, 2006b). Data were collected over a

10-year period (2000–2010) in five waves by SRI International. The purpose of NLTS2 was to collect data that were nationally representative of students across the 12 disability categories (i.e., autism, deaf-blindness, emotional disturbance, hearing impairment, learning disability, mental retardation, multiple disabilities, orthopedic impairment, other health impairment, speech and language impairment, traumatic brain injury, and visual impairment) recognized in the IDEA. To achieve this goal, SRI International implemented a two-stage sampling plan, first randomly sampling districts serving students with disabilities aged 13 to 16 stratified by geographic region, size, and community wealth. Next, students were randomly selected within each district in each of the 12 disability categories. To achieve a sufficient sample, approximately 1,250 students were sampled per disability category at the first wave of data collection (SRI International, 2000). Because of the stratified random sample, weights were developed and are made available to researchers using NLTS2 data to ensure that the data are representative of the distribution of disability category, age, and race/ethnicity of students with disabilities in the nation.

Data source. Our primary data source was the Student Assessment, conducted during Waves 1 or 2 of the NLTS2 data collection. Data provided by the school on the disability label under which students received special education services as well as the racial or ethnic group designated in the student's school file were also used in the analyses. Students participated in the Student Assessment once during NLTS2 when they were between 16 and 18 years of age. Thus, students older at the start of data collection participated during Wave 1, and students younger at the start of data collection during Wave 2 (Wagner, Newman, Cameto, & Levine, 2006a). There were two forms of the Student Assessment. One involved direct testing of student's reading, math, social, and life skills using standardized or criterion referenced assessments (Direct Assessment). A subset of questions from *The Arc's SDS* (Wehmeyer & Kelchner, 1995) was included in the Direct Assessment. Teachers were asked to determine eligibility for the Direct Assessment based on the following criteria. The student (a) has a consistent response mode, (b) is able to work with a stranger, and (c) is able to complete the first item of the Direct Assessment battery. For students unable to participate in the Direct Assessment, teachers completed the *Scales of Independent Behavior-Revised* (SIB-R; Bruininks, Woodcock, Weatherman, & Hill, 1996); no assessment of self-determination was completed. Therefore, we only included in our analyses data from students who completed the Direct Assessment. Table 1 provides the percentage of students within each disability category who took the Direct Assessment, highlighting the variability of participation across disability categories. Because only a percentage of students within each category participated in the Direct Assessment, it is important to note that the results are representative of students with disabilities who are able to participate in the Direct Assessment, not the entire population of students with disabilities.

Table 1. Percentage of Students by Disability Category Who Completed the Direct Assessment.

Disability label	Percentage of students
Autism	58
Deaf-blindness	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

As mentioned previously, a subset of questions from *The Arc's SDS* (Wehmeyer & Kelchner, 1995) was included in the Direct Assessment. The complete SDS includes 72 items that are grouped into four subscales that correspond to the four essential characteristics of self-determination (autonomy, self-regulation, psychological empowerment, and self-realization) identified in the functional theory of self-determination (Wehmeyer, 2003). Shogren et al. (in press) analyzed the 26 items included in NLTS2 that were sampled from three of the four subscales, concluding that an overall self-determination construct was not supported by the data. Instead, a limited three-construct representation of self-determination using parcels to identify each latent construct was determined to be the most appropriate way to conceptualize the available data. We adopted this framework for conceptualizing the available NLTS2 self-determination data in the present analyses. As mentioned previously, Shogren et al. also explored potential differences in autonomy, self-realization, and psychological empowerment across the 12 disability groups included in NLTS2 using multiple-group confirmatory factor analysis (CFA) based on the Means and Covariance Structures (MACS) model (Little, 1997), and identified disability groups including a high incidence disabilities group (learning disabilities, emotional disturbances, speech language impairments, and other health impairments), a sensory disabilities group (visual and hearing impairments), and a cognitive disabilities group (autism, multiple disabilities, and deaf-blindness). The remaining three disability categories could not be collapsed and were included as their own group in the models: intellectual disability, traumatic brain injury, and orthopedic impairments.

Analytic Procedure

The present analyses build on the work of Shogren et al. (in press) to examine the extent to which race/ethnicity group differences exist on self-reported autonomy, self-realization, and psychological empowerment within the six disability groups. We used the measurement framework for self-determination and the disability groups established by Shogren et al. as our starting point and added race/ethnicity to examine whether differences in self-determination can be detected within disability categories based on student race/ethnicity. We included the three largest racial/ethnic groups (Caucasian, Hispanic, and African American) in the analyses, consistent with past reports issued by SRI (Cameto, Levine, & Wagner, 2004; Newman et al., 2011) as there was not a sufficient sample to include other, smaller racial/ethnic groups (e.g., Asian/Pacific Islander, American Indian/Alaskan Native) in the analyses. We found, however, that even when only including White, Hispanic, and African American youth, in three instances, the sample size when crossing race/ethnicity with disability categories was so small that it precluded inclusion in the models—this occurred for Hispanic youth with intellectual disability, and African American and Hispanic youth with traumatic brain injury. Due to the low *n* and literature suggesting loss of power where there is large variance among group sizes (Hancock, Lawrence, & Nevitt, 2000), these three groups were dropped from the overall model, resulting in 15 groups included in the multiple-group CFA.

Multiple-group CFA using Mplus, version 6.12 (Muthén & Muthén, 1998–2010) with the "type = complex" option and the "wt_na" sampling weight, stratum, and cluster variables for the complex sampling design was used to analyze the data. To address Research Question 1, we used the MACS model (Little, 1997) approach to examine configural, weak factorial, and strong metric invariance to confirm measurement equality across groups. First, we estimated the configural invariance model, testing for the same pattern of fixed and free parameters across the 15 groups. We considered acceptable model fit at each level to be a root mean square error of approximation (RMSEA) of less than .08 and a relative non-normed fit index (NNFI) and comparative fit index (CFI) of .90 or greater (Little, in press). Second, we estimated the weak factorial invariance model, testing equality of factor loadings. To establish measurement invariance, we estimated the strong invariance model, testing equality of factor means. We used a CFI difference of less than .01 between models (Cheung & Rensvold, 2002) and whether the nested models fell within the 90% confidence interval (CI) of the previous model using the RMSEA (Little, in press) to confirm invariance across the increasing constraints.

To address Research Question 2, we performed a series of two group contrasts to examine differences in race/ethnicity within each constrained group (i.e., high incidence group, cognitive impairment group, etc.) in latent means, variances, and covariances (correlations) of the structural models (Little, 1997).

Results

The initial 15 group model fit well, $\chi^2(294, N = 5{,}240) = 446.085$, RMSEA = 0.040(0.032, 0.047), NNFI = 0.951, CFI = 0.965. This model was modified, however, by introducing phantom variables for the weak invariance test to constrain the correlations to less than 1 (Little, in press). Phantom variables are higher-order constructs with standardized paths at the higher level that parallel the lower-order constructs. Phantom variables are useful because correlations at the latent level can be constrained without altering the structural relations of the model (Rindskopf, 1984). The modified model that constrained the correlations (i.e., covariances at the phantom level) to less than 1.00, was not significantly different from the initial model, chi-square test ($p = .64$), indicating we could use this method to test for differences across groups.

Research Question 1

We next examined measurement invariance using the MACS approach (Little, 1997). The models supported measurement invariance with the change in CFI remaining at or below 0.01 for all levels of measurement invariance (see Table 2). When the change in CFI was at or close to the suggested .01 cutoff values for acceptable fit, we also considered the RMSEA of the nested models. All nested model RMSEAs fell within the CI of the less constrained model. Across the 15 disability-by-race/ethnicity groups, therefore, the models showed equivalent psychometric properties at the construct level and can be meaningfully compared across groups. Loadings and intercept values for the strong invariant model are provided in Table 3. Having established strong equivalence, we could move on to examining latent differences.

Research Question 2

After establishing measurement invariance, we proceeded to test for subgroup differences in the latent means, variances, and correlations among phantom constructs. Table 4 provides the latent variances, means, and correlations for autonomy, self-realization, and psychological empowerment presented by race/ethnicity groups within each disability category.

The only differences in latent variances were related to the psychological empowerment construct. First, for the high incidence disability group, Hispanic students had greater variability in psychological empowerment, the latent variance for this group was 4.3 units larger than their

Table 2. Invariance Testing for Alternative Null Model: Santorro–Bentler Correction for MLR.

Invariance/equality test	χ^2	*df*	RMSEA	90% CI	CFI	NNFI	Change S-B χ^2	S-B *p* value
Measurement invariance								
Configural	446.97	284	0.042	[0.034, 0.049]	0.963	0.945		
Loadings	493.07	326	0.040	[0.032, 0.047]	0.962	0.951		
Loadings with phantom variables (correlations fixed)	494.22	328	0.039	[0.032, 0.047]	0.962	0.952	1.150	.563
Intercepts	625.98	396	0.042	[0.036, 0.048]	0.948	0.944		
Intercepts with phantom variables (correlations fixed)	626.87	398	0.042	[0.036, 0.048]	0.948	0.945	1.279	.528
Homogeneity of latent parameters								
Variances and covariances	794.23	480	0.045	[0.039, 0.050]	0.928	0.937	169.055	.000
Variances only	751.06	438	0.047	[0.041, 0.053]	0.929	0.932	129.105	.000
Covariances only	705.53	438	0.043	[0.037, 0.049]	0.939	0.942	83.988	.000
Latent means	824.49	438	0.052	[0.043, 0.054]	0.912	0.916	199.829	.000

Note. RMSEA = root mean square error of approximation; CI = confidence interval; CFI = comparative fit index; NNFI = non-normed fit index.

Table 3. Loading and Intercept Values for the Strong Metric Invariance Models.

	15 group disability and ethnicity model estimate	
Indicator	Loading (*SE*)	Intercept (*SE*)
Autonomy		
Parcel 1	0.349 (0.02)	2.931 (0.02)
Parcel 2	0.325 (0.02)	3.026 (0.02)
Parcel 3	0.387 (0.02)	2.755 (0.02)
Self-realization		
Parcel 1	0.431 (0.02)	3.080 (0.03)
Parcel 2	0.431 (0.02)	3.112 (0.03)
Psychological empowerment		
Parcel 1	0.100 (0.01)	1.839 (0.01)
Parcel 2	0.091 (0.01)	1.910 (0.01)
Parcel 3	0.097 (0.01)	1.923 (0.01)

White counterparts ($p < .01$ for all contrasts noted). Second, in the orthopedic impairments group, African American students had less variability in psychological empowerment compared with White (with a ratio of 4.54) and compared with Hispanic students (with a ratio of 5.56).

Differences in the latent means by race/ethnicity were found for each of the three self-determination constructs. In the cognitive impairment group, African American students had higher autonomy compared with White ($d = 1.17$) and Hispanic ($d = 0.58$) students. In the cognitive impairment group, African American students had higher self-realization than did Hispanic students ($d = 0.56$). Hispanic students in the sensory impairments group had lower psychological empowerment than White ($d = 0.49$) and African American ($d = 0.42$) students. Finally, in the intellectual disability group, African American students had higher psychological empowerment than their White counterparts ($d = 0.24$).

The only significant difference in latent correlations occurred between self-realization and psychological empowerment, where the association was much larger for Hispanic students in the orthopedic impairments group (0.95) compared with their White counterparts (0.49). In fact, the latent correlation is large enough to call into question the need to separate the two constructs for Hispanics in this disability group. For all other disability groups, the latent correlations among the three self-determination constructs were invariant across race/ethnicity groups.

Discussion

The purpose of this study was to examine the extent to which autonomy, self-realization, and psychological empowerment vary by race/ethnicity within disability groups among transition age youth. Using data from NLTS2, we were able to explore the intersection of these factors in a nationally representative sample, finding that race/ethnicity in combination with disability label influences youth's relative levels of autonomy, self-realization, and psychological empowerment, although the pattern of influence is complex and in need of further research. In this section, we will discuss the findings related to the two research questions, as well as limitations and directions for future research and practice.

Measurement Equivalence

Despite the fact that the NLTS2 Direct Assessment included only a subset of items from *The Arc's SDS*, the NLTS2 items loaded on constructs representing three of the four essential characteristics of self-determination—autonomy, self-realization, and psychological empowerment. We found that across six disability groups established by Shogren et al. (in press), the constructs are measured in an equivalent fashion across racial/ethnic groups (see top half of Table 2). This

Table 4. Strong Metric Invariance Model Across 15 Disability and Ethnicity Groups Latent Variance and Mean Differences.

	High incidence			Cognitive impairment			Sensory impairment			Intellectual disability			Orthopedic impairment			Traumatic brain injury		
Groups	White (reference)	African American	Hispanic	White	African American	Hispanic	White	African American	Hispanic	White	African American	Hispanic (dropped)	White	African American	Hispanic	White	African American	Hispanic
AUT																		
Latent variance difference	1.000	1.437	1.136	1.683	2.048	2.699	1.096	1.425	1.208	1.338	1.327	NA	1.141	1.059	1.588	1.145	NA	NA
Mean difference	0.000	0.063	−0.161	1.257[a]	0.298[b]	−0.572	0.234	−0.052	−0.134	0.164	0.185	NA	−0.193	0.077	−0.481	0.064	NA	NA
SREAL																		
Latent variance difference	1.000	1.023	0.932	1.318	1.030	0.977	0.892	0.617	0.744	0.925	0.993	NA	0.794	0.660	1.119	0.650	NA	NA
Mean difference	0.000	0.286	0.005	−0.348	0.306[b]	−0.357	0.086	0.110	−0.091	−0.100	0.182	NA	0.126	0.249	−0.096	0.088	NA	NA
PSYE																		
Latent variance difference	1.000[c]	1.842	4.295	1.683	3.046	2.014	1.312	1.628	1.532	1.393	2.917	NA	1.749[a]	0.385[b]	2.139	0.407	NA	NA
Mean difference	0.000	0.085	−0.437	−1.257	−1.101	−1.249	−0.155[c]	−0.200[b]	−0.731	−0.946[a]	−0.610	NA	−0.291	0.115	−0.720	−0.163	NA	NA

Note. The only statistically significant difference in latent correlations occurred between Self-Realization and Psychological Empowerment constructs for Hispanic ($r = .95$) and White ($r = .49$) students in the orthopedic impairments group. AUT = autonomy; SREAL = self-realization; PSYE = psychological empowerment.
[a]White differs from African American. [b]African American differs from Hispanic. [c]White differs from Hispanic.
$p < .01$

finding builds on earlier work with the NLTS2 data set, which established that the constructs could be measured in the same way across disability groups (Shogren et al., in press); that is, this finding indicates that measurement invariance also holds when diverse racial/ethnic groups are examined within disability categories. Establishing measurement equivalence suggests that the same constructs are being measured across groups and that the same indicators can be used to measure these constructs. Factorial invariance is important to establish, particularly for diverse students, to ensure that group differences do not influence item functioning. Further measurement invariance provides a basis to examine the variances, covariances, and means with quantitative precision (Little, 1997), which enabled us to move forward and examine our research questions related to cross-group differences. Factorial invariance also suggests that in future research when conceptualized as a limited three-factor model, the available NLTS2 items can be used to understand the constructs of autonomy, self-realization, and psychological empowerment in diverse students with disabilities.

Latent Differences

Although there was equivalence at the measurement level, the results (see bottom portion of Table 2) suggest that at the latent level there were some significant differences across groups in the latent means, variances, and correlations. Using effects coding, we were able to explore the specific pattern of differences by comparing racial/ethnic groups within each disability category (with the exception of the traumatic brain injury category because the African American and Hispanic groups had to be dropped due to small sample sizes). Interestingly, while Shogren et al. (in press) found that the majority of differences across the six disability groups were concentrated in the latent variances, the present analyses found a more complex pattern of differences when race/ethnicity was added to the models. This suggests that race/ethnicity adds additional unique information, above and beyond disability alone that explains student's relative levels of autonomy, self-realization, and psychological empowerment.

Generally, Hispanic youth tended to score lower than African American or White youth in autonomy, self-realization, and psychological empowerment although these differences were not significant in all of the disability groups. Researchers have suggested that in some circumstances Hispanic youth may express self-determined behavior differently because of a greater focus on collective or familial goals (Shogren, 2012; Trainor, 2005), but researchers have not systematically explored differences in self-determination scores based on race/ethnicity (Wood et al., 2005). Our findings suggest that race/ethnicity can influence self-reported levels of self-determination and should be examined when exploring the impact of interventions to promote self-determination. In addition, issues related to the expression, measurement, and promotion of self-determination in Hispanic students deserves further attention.

In terms of mean-level differences, the cognitive impairment, sensory impairment, and intellectual disability groups

each demonstrated mean-level differences. Within the cognitive impairment group, which includes youth with autism, multiple disabilities, and deaf-blindness, African American youth scored significantly higher than White and Hispanic youth in their self-reported levels of autonomy, and African American youth scored significantly higher than Hispanic youth in their self-realization. Limited research has explored the experiences of African American youth with severe disabilities, particularly related to self-determination. Some researchers have suggested, however, that some African American youth are strongly oriented toward independence, perhaps even more than mainstream U.S. culture (Leake & Boone, 2007). The influence of the value placed on independence within the African American community may be reflected in these findings, particularly if these considerations influence family and community practices related to self-determination. Further research is needed to determine the factors that contribute to this finding, as well as the influence of family values particularly for students with severe disabilities. Researchers have suggested that home environments are often more supportive than school environments for self-determination for diverse students (Leake & Boone, 2007; Shogren, 2012; Trainor, 2005), and this may contribute to higher self-reported autonomy and self-realization in African American youth.

In youth with sensory impairments (i.e., visual and hearing impairments), White students tended to score higher in psychological empowerment than African American youth, and Hispanic students reported higher psychological empowerment than did African American students. In the limited work on the self-determination support needs of students with sensory disabilities, researchers have suggested there may be specific issues to be considered in this population. However, issues related to self-determination, race, and disability have not been explored and this study suggests that there may be factors related to race/ethnicity in combination with disability that should be further explored. Researchers have suggested that having a sensory disability can influence environmental opportunities for self-determination (Agran, Hong, & Blankenship, 2007), and that being from a diverse cultural background can limit the ability of students to benefit from school-based interventions to promote self-determination, particularly when they are not culturally responsive (Shogren, 2012; Trainor, 2002). These factors may contribute to the finding that diverse youth with sensory disabilities report lower levels of psychological empowerment. More research is needed to explore this finding and to identify ways to build interventions that promote environmental opportunities that are responsive to the disability and cultural characteristics of students.

Within the intellectual disability group, insufficient sample size made it impossible to examine the Hispanic subgroup, but there were significant differences between White and African American students on the psychological empowerment construct. Interestingly, African American students scored higher than White students. Researchers have consistently found that students with intellectual disability, compared with their peers with other disabilities, experience greater psychological disempowerment, perhaps because of limited opportunities for self-determination driven by low expectations (Shogren, Bovaird, Palmer, & Wehmeyer, 2010; Shogren et al., in press; Wehmeyer, 1994). The higher levels of psychological empowerment reported by African American youth is a noteworthy finding, and should be further explored. As discussed previously, there may be family and community characteristics that influence the expression or development of self-determination in African American youth. Future research is needed to examine the factors that influence the psychological empowerment of youth with intellectual disability, with a specific focus on African American youth.

There were no significant mean-level differences in the high incidence disability group; however, there were differences in the latent variances of the psychological empowerment construct for White and Hispanic youth. This finding is not unexpected when considering the diverse characteristics of students within the high incidence disability category. As suggested by Shogren et al. (in press), significant differences in latent variances may indicate that race/ethnicity and disability do not adequately capture the factors that contribute to differences among students in their relative levels of self-determination. Many factors contribute to the development and expression of self-determination and more work is needed to identify the most salient factors. Similarly, there were differences in the latent variances of the orthopedic impairment group, particularly in the latent variances associated with psychological empowerment. Further exploration of the influence of the disability-related support needs, family support, community support, and opportunities for self-determination is needed for students across disability categories.

Finally, the latent correlation between self-realization and psychological empowerment was .49 for White students and did not differ significantly for African American students, yet both the same constructs have almost perfect overlap for Hispanic students ($r = .95$). Research has consistently documented differences between the self-realization and psychological empowerment constructs for youth with disabilities (Shogren et al., 2008; Wehmeyer & Kelchner, 1995); however, race/ethnicity has never been systematically considered in these analyses. Further research is needed to examine the degree to which Hispanic youth differentiate between self-realization and psychological empowerment. Researchers have suggested that empowerment and self-realization may be closely linked to family values and visions for the future of diverse youth (Frankland, Turnbull, Wehmeyer, & Blackmountain, 2004; Shogren,

2012), and perhaps this influences the differentiation of these two constructs.

Limitations

There were several limitations to this study that must be considered in examining its implications. First, we were reliant on the data that were collected as a part of NLTS2. NLTS2 only included a subset of items from *The Arc's SDS* representing three of its four subscales. This limited our ability to create an overall self-determination construct; however, we were able to examine a limited three-construct model—autonomy, self-realization, and psychological empowerment. Second, despite the use of a nationally representative sample in NLTS2, only a subset of students participated in the Direct Assessment. Teachers selected who was able to participate, and although there were common selection criteria, a number of factors related to teacher perceptions of disability as well as race and ethnicity may have influenced the determination of who was able to participate. As shown in Table 1, disability categories that include students with more intensive support needs had lower representation in the Direct Assessment, as might be expected, but the degree to which teacher perceptions of disability and race/ethnicity played into participation cannot be clear. Furthermore, because diverse students tend to be overrepresented in certain high incidence disability categories (Skiba et al., 2008) and underrepresented in certain low incidence categories, such as Hispanic students in the autism category (Morrier & Hess, 2012), the degree to which the sample is representative of the true population of students with disabilities and their levels of self-determination is unclear. Finally, unexpected findings emerged in the original disability analyses (Shogren et al., in press) that complicate the interpretation of the findings (e.g., intellectual disability not fitting within a cognitive disability group, suggesting distinct patterns of differences beyond simply the presence or absence of a cognitive disability). Overall, these complex relationships suggest the need to attend to multiple individual and ecological factors when studying the self-determination of youth with disabilities. Despite these limitations, however, the results provide important information about the influence of race/ethnicity on autonomy, self-realization, and psychological empowerment that can serve as a direction for future research.

Implications for Future Research and Practice

In many ways, the findings of this study raise more questions than answers, and suggest the importance of future research that systematically explores the multiple factors that influence self-determination. The results suggest that disability and race/ethnicity exert an influence on youth's self-reported levels of autonomy, self-realization, and psychological empowerment. In future research, it will be critical for researchers to explore the influence of race/ethnicity on self-determination outcomes as self-determination research has often excluded this variable (Wood et al., 2005); however, the results also suggest that race/ethnicity and disability are not the only individual and ecological factors that influence self-determination. Given this, in practice, promoting student self-determination must be based on an individualized assessment and understanding of each student's personal beliefs and needs regarding self-determination. Each individual's personal culture is likely to influence his or her level of self-determination and the interventions that will be maximally effective. Developing an in-depth understanding of each student's personal culture should be foundational to selecting, implementing, and evaluating self-determination interventions. And, future research is needed to explore the multiple factors that contribute to personal culture and the mechanism though which personal and environmental factors influence self-determination. Only then can strategies be developed, implemented, and evaluated that create multiple, interrelated opportunities for students to practice the skills and develop the attitudes associated with self-determined behavior that are personalized to their self-determination needs.

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