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Revisiting Economic Hardship in a National Sample of Adolescents With and Without Disabilities: A Conceptual Replication

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Abstract

The purpose of the current study was to conceptually replicate a multi-indicator construct of economic hardship in a national sample of adolescents with and without disabilities ($N = 9{,}230$). Using data from the National Longitudinal Transition Study 2012 (NLTS2012), the latent construct economic hardship was confirmed from six theoretically relevant indicators: household income, parent education level, parent employment status, one- or two-parent household, household internet access, and participation in government-assisted social programs (e.g., Supplemental Security Income benefits, Supplemental Nutrition Assistance Program, Temporary Assistance for Needy Families). In addition, we examined group differences on the latent mean of economic hardship based on disability category, race and ethnicity, and school and family factors. Mean differences showed significantly lower economic hardship for youth on 504 plans, youth with autism, and for White non-Hispanic youth; whereas there was significantly greater hardship for youth with intellectual disability and youth with emotional disturbance and among youth of color. The implications of the replicated and expanded findings for adolescents with and without disabilities are discussed.

The hidden cost of disability on adult life is undeniable. Recent findings estimate U.S. households with one adult with a disability would need to earn an additional 30% of household income in order to maintain the same standard of living as a household of family members without disabilities (Morris et al., 2021). In the same study, findings showed even greater hardship for single adults with disabilities as compared with their peers with disabilities who are married or live with other family members (Morris et al., 2021). Secondary transition educators carry out legally mandated services in order to prepare youth with disabilities for adult life, yet disability-related costs that create hardships and carry into adult life may not be adequately addressed as part of transition planning. Although the secondary special education and transition literature base supports a deep understanding of effective predictors of postschool success (Mazzotti et al., 2021), less is known about the role of poverty and economic hardship in decisions made and supports needed by youth

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with disabilities and their families with regard to postschool goals. Moreover, the transition literature base tends to focus on categorical disability differences, and thus there is a persistent need to examine more thoroughly intersectional student characteristics beyond only disability category (Trainor et al., 2020). As such, there is a growing need to better clarify the role of economic hardship on youth with disabilities who experience other marginalized identities in the context of secondary special education in order to identify needed supports and improve transition services.

In the current study, we sought to better understand the complexity of poverty and associated risk factors that may contribute to economic hardship for adolescents and young adults with disabilities. We used the National Longitudinal Transition Study 2012 (NLTS 2012), a nationally representative data set on the experiences of youth with and without disabilities as they transition from school to adult life, to explore a range of risk factors linked to poverty. Murray and colleagues (2015) developed a construct of economic hardship using data from the NLTS2, an earlier iteration of the data set. Our goal was to conceptually replicate this work by selecting the same or similar variables from the updated NLTS2012 data set and examine group differences based on the latent mean of the established construct to better understand the complexity of economic hardship across disability categories, race and ethnicity, age, and other related risk factors. The relevant indicator variables are not identically collected in the NLTS2012, and the context of some, such as internet availability, social programs, and health care access, may have changed. Our study is a conceptual rather than direct replication in that key contextual factors may slightly differ (Makel et al., 2016) in order to adequately represent the ever-changing landscape of educational contexts. Replication research is important to prioritize in special education research, as evidence of replication reduces the possibility the original findings were due to error or chance (Coyne et al., 2016). Despite this important step in scientific inquiry, replication research studies remain scarce (Makel et al., 2016). Moreover, there are few attempts to replicate findings across the NLTS2012 data and earlier NLTS iterations.

Defining Economic Hardship

To date, Murray et al. (2015) is the only published study of NLTS data that used a combination of variables to define "economic hardship." These researchers emphasized economic hardship extends the narrow definition of "poverty," which is mostly focused on income and food costs, by combining multiple related indicators of hardship that could contribute to poverty (Murray et al., 2015). For the purpose of the current study, we explored a similar set of household factors in the updated NLTS2012 data, including income, employment, level of education, and family structure, as well as systemic indicators, such as type of health insurance and participation in government-sponsored social programs.

Household Income

Household income is a commonly used variable to measure poverty in published studies using NLTS2 and NLTS2012 data. Previously published studies on the NLTS2012 have used one variable, household income, as an indicator of poverty and socioeconomic status (e.g., Johnson et al., 2020; Matthias et al., 2021; Newman et al., 2021); meanwhile, others used a combination of variables related to income and employment status (Qian et al., 2020). Moreover, previous research highlighting the NLTS2012 data show higher levels of income are positively correlated with higher parental expectations and participation in typical college-readiness milestones, such as college entrance or Advanced Placement tests (Qian et al., 2020).

Parent Education Level

Parent education level is related to economic hardship. In fact, parents with lower education levels have greater economic disadvantages and face greater life stressors (Neckerman et al., 2016). Previous findings show links between mother's education, student achievement, income, and employment status; specifically, single mothers who had less education were also more likely to have lower income status and income earnings, which negatively

influenced their child's academic performance and success (Cruse et al., 2018; Erola et al., 2016; Lacour & Tissington, 2011; Neckerman et al., 2016). Parents who earned a postsecondary degree, particularly women, had greater pathways out of poverty (Cruse et al., 2018). Because mothers' education level had the greatest influence on their children's achievement, their improved economic status also improved their children's academic chances. In short, parent education level matters, and it has ties to economic hardship.

Family Structure

Single-parent households face more economic hardship as compared with two-parent households; specifically, single-parent families are more likely to contend with financial hardships, mental health issues, food insecurity, and home rent instability issues (Stack & Meredith, 2018). Moreover, children who lived in two-parent households reported the lowest rates of poverty at 7%, and this percentage held across most racial and ethnic groups (National Center for Education Statistics, 2022). Family composition and economic status were closely associated with children's educational achievement and experience (National Center for Education Statistics, 2022). In sum, financial strain, low parent educational level, single-parent status, and underemployment are factors linked to economic hardship and student underachievement (Jackson et al., 2000). Each of these factors is likely related to other structural factors and barriers, such as access to health insurance.

Social Program Participation

The NLTS2012 data offer a wider range of government assistance program participation variables to examine as compared to the NLTS2. As such, the NLTS2012 data allow for more precise examination of poverty indicators. Supplemental Security Income (SSI) provides a monthly income to individuals who have low income or few resources (i.e., personal vehicle or anything deemed as personal property) or have a disability (Social Security Administration, n.d.). Youth who are receiving SSI benefits have disparate educational experiences and face additional obstacles when transitioning from high school, likely because of other structural barriers (Anderson & Golden, 2019; Golden et al., 2021). As the largest food assistance program in the United States, the Supplemental Nutrition Assistance Program (SNAP) provides cash-like benefits to low-income individuals and families to use only for purchasing food (Gassman-Pines & Bellows, 2015). Temporary Assistance for Needy Families (TANF) is designed to support low-income families in achieving self-sufficiency. TANF is federal funding provided to states and aligned with at least one of the following purposes: aid families in need so that children can be cared for in their home or in the homes of relatives; end the dependency of needy parents on government benefits by promoting job preparation, work, and marriage; prevent and reduce the incidence of out-of-wedlock pregnancies; and encourage the maintenance of two-parent families (Office of Family Assistance, 2019). Moreover, families covered by TANF may experience an improved daily routine; increase in parents' educational expectations of their children, accompanied by children working harder; and decrease in the child's likelihood of repeating a grade (Wang, 2015). Although all three social programs (SSI, SNAP, TANF) differ slightly in focus, participation indicates that there is likely an interaction with other factors that impact the household's economic hardship, such as lack of equity in educational opportunities, housing options, employment, and so on.

Household Internet Access

We considered lack of household internet access as potentially related to economic hardship. According to the U.S. Census Bureau, low-income households were less likely to have computer and internet availability than high-income households and also less likely to use that access for educational purposes (Ryan, 2018; U.S. Census Bureau, 2020). More recently, inequities due to lack of internet access have been exacerbated due to the COVID-19 pandemic, with roughly 93% of students taking part in distance learning (McElrath, 2020). Murray et al. (2015) included household telephone access but did not consider household internet access. In

today's context, household internet access could be a more crucial resource than telephone access.

Purpose of Study and Research Questions

The purpose of this study was to conceptually replicate a multi-indicator construct of economic hardship using the NLTS2012 data. We purposefully selected variables that were the same as or similar to those in a previous study by Murray et al. (2015) that represent a range of risk factors related to poverty. We sought to confirm the economic hardship latent construct as well as examine group differences in the latent means based on disability category, race and ethnicity, and other related risk factors. Specific to disability, although some recent published studies included youth without disabilities (Fisher et al., 2020; Newman et al., 2021; Trainor et al., 2019), the vast majority of published studies do not include youth without disabilities or delineate those on 504 plans. Therefore, in this study, we examined youth without disabilities and those on 504 plans in all analyses as well as youth from diverse racial and ethnic backgrounds. Findings will inform the secondary transition and special education literature base as well as the broader general education research to better understand the relationship between intersectional student characteristics and postschool outcomes. Specifically, we addressed the following research questions:

1. Can a multiple-indicator factor for economic hardship be conceptually replicated using the NLTS2012?
2. What are the economic hardship factor score differences among groups based on disability category, race and ethnicity, and other relevant risk factors?

Method

Data Source

From 1985 to 2015, the Department of Education funded the NLTS in order to explore the secondary school and postschool experiences of a nationally representative sample of students in each of the disability categories defined in the Individuals With Disabilities Education Improvement Act (2004). NLTS2 was the next iteration of this line of work and was a companion study to the original NLTS. NLTS2 data collection began in 2001 and continued through 2010. NLTS2012 is the third in the series, and its purpose was to provide a more recent sampling of the secondary and postschool experiences of a nationally representative sample of students with and without disabilities. The NLTS2012 sampling plan was designed to generalize to the population of students receiving special education services in the United States in each federally recognized disability category at the secondary level (i.e., autism, deaf-blindness, emotional disturbance, hearing impairment, learning disability, intellectual disability, multiple disabilities, orthopedic impairment, other health impairment, speech and language impairment, traumatic brain injury, and visual impairment). It also included students with 504 accommodation plans and students without disabilities, which we will incorporate into our planned analyses to better understand differences between those who receive special education services and those who do not.

NLTS2012 randomly sampled 430 school districts and special schools in 2011 and then randomly sampled 21,960 students within those districts. Survey data were collected in 2012–2013 from approximately 12,000 in-school youth and their parents. This sampling strategy provides precise, nationally representative estimates of the backgrounds and experiences of sampled students. Districts included local education agencies, charter schools that operate independently, and state-sponsored special schools that serve deaf and blind youth.

Study Participants

Similar to the sampling design in NLTS2, NLTS2012 kept a two-stage, stratified sampling process to select participants for inclusion. A stratified national random sample of local education agencies, charter schools, and state-sponsored special schools in different

geographic regions was initially selected, representing the full population of students with and without disabilities in the United States. Second, a stratified sample of participants who agreed to participate in the study was randomly selected from each district. Sampling weights were therefore used in the analysis. In NLTS2012, there are two sets of weights for both the parent survey and youth survey. Because we selected variables that did not depend on youth age or grade at the time of the survey, the parent survey weight for the full respondent sample p_weight_allyouth was used along with weight, cluster, and stratification variables in the analyses. Table 1 shows a description of the unweighted sample characteristics. Notably, more than half of the sample (52%) reported an annual household income less than $40,000. To examine economic hardship across race and ethnicity as well as disability type, we grouped the participants into 12 race and ethnicity groups and nine disability types based on previous groupings with the NLTS2012 (Lombardi et al., 2022).

Procedures

Data were collected in 2012 and 2013. In 2012, survey administration employed computer-assisted telephone interviewing. In 2013, a web survey option and field interviewers were also used along with the telephone interviews. Across the 2 years of data collection, there were a total of 12,990 parent surveys of youths, representing a 59% unweighted response rate and a 57% weighted response rate. Youth age ranged from 12 to 22 during the time of interview; the majority of youth were between 13 and 21 years old. All participating youth were in Grades 7 through 12 or in a secondary ungraded class at the time of sampling.

Measures

Theoretically and empirically relevant indicators were initially selected for the current study based on Murray et al. (2015). The indicators described different aspects of economic hardship, including household income, parent highest education level, parent employment status, participation in social programs (e.g., SSI benefits, SNAP, TANF), and lack of household resources (e.g., household internet access). Due to changes between NLTS2 and NLTS2012 variables, we were unable to select precisely the same set of variables and thus aimed to construct a conceptual replication. A complete list of variables from both studies is shown as a side-by-side comparison in Appendix A (see the online supplemental materials).

Household income. Household income level was selected as the first essential indicator of economic hardship in Murray et al.'s (2015) study. In NLTS2012, we selected the indicator p_h_income, which ranges from $40,000 or less per year to more than $120,000, in $40,000 increments. We reverse coded the variable so that high levels indicated greater economic hardship. Therefore, a four-level ordinal variable was coded for this variable, where 1 = more than $120,000, 2 = $80,001 to 120,000, 3 = $40,001 to 80,000, and 4 = $0 to $40,000.

Family size. Murray et al. (2015) included the variable Np1K2a, or the number of children in the household representing family size from the NLTS2 data. In NLTS2012, this variable was not collected. Instead, we selected p_h_nadult, "number of adults in the household," a count variable that ranges from 0 to 20. More than five adults (6–20 adults) and zero adults in a household were both rare phenomena in the sample (1.5% among all); therefore, we recoded this count variable into a five-level ordinal variable: 1 = five adults, 2 = four adults, 3 = three adults, 4 = two adults, and 5 = one adult (all other responses were counted as missing).

Parent highest level of education. In NLTS 2012, H5 described highest level of education completed by the parent with a similar 10-category ordinal variable ranging from eighth grade or less education to doctoral or other advanced degrees. We recoded and collapsed it into a four-level ordinal variable: 1 = advanced degree (master's degree or higher), 2 = associate's or bachelor's degree

(vocational-technical degree or certificate, 2-year college degree, and 4-year college degree), 3 = high school diploma or GED (high school graduate or GED), and 4 = less than high school education (eighth grade or less, ninth grade or above, not a high school graduate).

Parent employment. Murray et al. (2015) applied three-level ordinal variable Np1HOH Work—"not employed," "employed part-time," and "employed full time"—to measure head-of-household (HOH) employment status. In NLTS2012, this variable was dichotomous, with p_h_employed: "youth in household which the parent or parent's spouse has a paid job." Response options were coded as 0 = yes and 1 = no.

Social program participation. Previously, participation in government-assisted social programs that are derived from "income transfer" policies was computed by summing whether a family received TANF state welfare, food stamps, or SSI (Murray et al., 2015). We selected three conceptually similar social program items in NLTS2012: p_h_tanf, "whether a youth in household that received TANF or state welfare in the past two years"; p_h_ssi, "youth received SSI benefits in the past 2 years"; and p_h_snap, "youth received SNAP benefits in the past 2 years." We summed these three dichotomous variables to create an ordinal variable that ranges from 0 (youth in the household did not receive any of the three welfare or benefits) to 3 (youth in the household received all three types of assistance in the past 2 years).

Lack of household resources. Murray et al. (2015) summed five variables to indicate the lack of household resources in NLTS2. In NLTS2012, there were two similar dichotomous variables: p_p_notmarried, "youth's parent is neither married nor in a marriage-like relationship," and G11, "youth access to computer at home with high-speed internet." We decided not to sum these two variables as one indicator and treated them as two separate indicators. For indicator p_p_notmarried, we coded 0 = no and 1 = yes. Conversely, for indicator G11 (0 = yes and 1 = no), higher values indicate greater economic hardship.

Validation Measures

We selected conceptually relevant indicators used in prior research as validation measures for the economic hardship construct and examined group mean differences (Murray et al., 2015; Wagner et al., 2003). Demographic indicators of youth included (a) gender, (b) race and ethnicity, (c) disability type, and (d) type of geographic location of school (city, suburb, rural). Other resources included (a) primary type of health insurance, which included private, government, and no insurance, and (b) whether or not a family was above or below the 185% federal poverty line. We also included two other variables: (a) ever held back a grade and (b) youth arrested in past 2 years. Similar to Murray et al. (2015), we used health insurance, which was categorized as three types: private (p_y_inshealthpriv), government-assisted or public health insurance (p_y_inshealthother), and no health insurance (p_y_inhealth); gender, p_y_gender (1 = female, 2 = male); household income, p_h_pov185, compared with 185% of the federal poverty level (1 = 1% to 185% of poverty level and 2 = above 185% of poverty level); and school location, sch_locale, which was categorized as city/suburb/town or rural; and two dichotomous variables: ever held back a grade, B13, and arrested in past 2 years, B16 (0 = no and 1 = yes).

Race and ethnicity. Race and ethnicity groupings were informed by a recent study using NLTS2012 data (Lombardi et al., 2022). Toward this end, we took a two-step approach to using separate race and ethnicity variables to combine as one "race and ethnicity" variable that took into account race category (G3) and "Are you Hispanic?" (yes or no; G2) which resulted in the following groups: (a) White non-Hispanic (n = 4,580), (b) White Hispanic (n = 1,290), (c) Black non-Hispanic (n = 1,680), (d) Black Hispanic (n = 80), (e) Asian American or Pacific Islander (AAPI) non-Hispanic (n = 230), (f) AAPI Hispanic (n = 30), (g) American Indian or Alaska Native (AIAN) non-Hispanic (n = 120), (h) AIAN Hispanic (n = 80), (i) missing-race non-Hispanic (n = 50), (j) missing-race Hispanic (n = 570), (k) multiple-races non-Hispanic (n = 450), and (l) multiple-races Hispanic (n = 70). Annotated software

Table 1. Sample Characteristics.

Variable	*n*	%
Gender		
Male	5,690	62.3
Female	3,540	37.7
Disability type		
No disability (neither 504 plan nor IEP)	1,550	16.8
504 plan (504 plan but no IEP)	540	5.9
Specific learning disability	1,320	14.3
Speech or language impairment	880	9.5
Intellectual disability	760	8.2
Emotional disturbance	970	10.5
Other health impairment	990	10.7
Autism	640	6.9
Other disability	1,580	17.1
Household income		
$0 to $40,000	4,480	52.1
$40,001 to 80,000	2,210	25.7
$80,001 to 120,000	1,080	12.6
More than $120,000	830	9.7
Race and ethnicity		
White non-Hispanic	4,580	49.6
White Hispanic	1,290	14.0
Black non-Hispanic	1,680	18.2
Black Hispanic	80	0.9
AAPI non-Hispanic	230	2.5
AAPI Hispanic	30	0.3
AIAN non-Hispanic	120	1.3
AIAN Hispanic	80	0.9
Missing-race non-Hispanic	50	0.5
Missing-race Hispanic	570	6.2
Multiple-races non-Hispanic	450	4.9
Multiple-races Hispanic	70	0.8
School location		
City	2,750	30.9
Suburb	3,010	33.9
Town or rural	3,130	35.2

Source. U.S. Department of Education, National Center for Education Statistics (NCES), National Longitudinal Transition Study, 2012.

Note. Group sizes are rounded to the nearest 10 per NCES, Institute of Education Sciences data security guidelines for restricted-use license holders. IEP = individualized education program; AAPI = Asian American or Pacific Islander; AIAN = American Indian or Alaska Native. Other disability includes hearing impairment, visual impairment, orthopedic impairment, traumatic brain injury, deaf-blindness, and multiple disabilities.

code files that show how we computed this variable are available in Appendix B (see supplemental materials).

Disability. For student disability category, we consulted the district reported variable (d_y_disability). In total, we examined students who neither are on a 504 plan nor have an individualized education program (IEP) ($n = 1{,}550$), students on a 504 plan ($n = 540$), and students with an IEP ($n = 7{,}210$). We grouped students with an IEP based on disability category, which resulted in seven groups: (a) specific learning disability ($n = 1{,}320$), (b) speech or language impairment ($n = 880$), (c) intellectual disability ($n = 760$), (d) emotional disturbance ($n = 970$), (e) other health impairment ($n = 990$), (f) autism ($n = 640$), and (g) other disability, which included hearing impairment, visual impairment, orthopedic impairment, traumatic brain injury, deaf-blindness, and multiple disabilities ($n = 1{,}580$). Approximately 70 cases with an IEP but no disability category were removed at this step. We kept these groupings consistent with Murray et al.'s (2015) study for the purpose of replication with three exceptions: Autism was separated as a distinct group (it was included as "other disability" in the previous study), and students on 504 plans and without disabilities were included (these groups were not available in NLTS2 data).

Data Analysis

We conducted a confirmatory factor analysis (CFA) to address Research Question 1. We hypothesized the seven observed indicators would load on one economic hardship factor. The parent level for all youth weights, p_weight_allyouth; clustering variable, c_apsu, and stratum variable, c_astratum, were incorporated into the analysis. Because the observed data for individual items were ordinal and dichotomous, the CFA was conducted with polychoric correlations with the WLSMV (mean- and variance-adjusted weighted least square) to account for the categorical nature of the items (Bowen & Masa, 2015). Overall model fit was assessed by a review of the chi-square test of exact fit (χ^2) and the standardized root mean square residual (SRMR; Joreskog & Sorbom, 1981). A nonsignificant χ^2 test of model fit indicates good fit. Approximate fit is indicated by SRMR of 0.06 or less as evidence of acceptable model fit (Hu & Bentler, 1999). Model fit was also evaluated with the comparative fit index

(CFI; Bentler, 1990), Tucker-Lewis index (TLI; Tucker & Lewis, 1973), and the root mean square error of approximation (RMSEA; Steiger & Lind, 1980). Specifically, a CFI or TLI of 0.95 or higher (Hu & Bentler, 1998, 1999) and RMSEA of 0.06 or below (Browne & Cudeck, 1993) were considered acceptable. Items with factor loadings of 0.40 or higher are retained and considered as the lowest acceptable threshold (Matsunaga, 2010). To address Research Question 2, we investigated criterion-related validity by examining the group mean factor scores on a set of related indicators of poverty and other demographic factors. In addition, we calculated Cohen's *d* on select group mean comparisons to better understand the magnitude of the difference.

Results

From the overall sample of 21,960 youth with and without disabilities, we proceeded with an analytic sample of youth with and without disabilities ($n = 9{,}230$) after removing cases that did not complete the youth and parent surveys ($n = 8{,}960$) as well as those that did not conduct the survey themselves ($n = 3{,}700$). All models were conducted using Mplus Version 8.4 (Muthen & Muthen, 1998–2019), and missing data were simultaneously treated, along with parameter estimation, using full information maximum likelihood. All data preprocessing was conducted in R Statistical Software (v4.1.1; R Core Team, 2021), and the plot depicted in Figure 1 was generated using the ggplot2 package (v3.3.3; Wickham, 2016). See the supplemental materials for annotated data analysis code (Appendix B).

Confirming the Economic Hardship Construct

A one-factor, seven-indicator CFA model was initially estimated with the sample data. The chi-square test of exact fit ($\chi^2_{df=14}$: 601.60, $p < .001$) and approximate fit indices (CFI = 0.87, TLI = 0.81, RMSEA = 0.067 [.063, 072], and

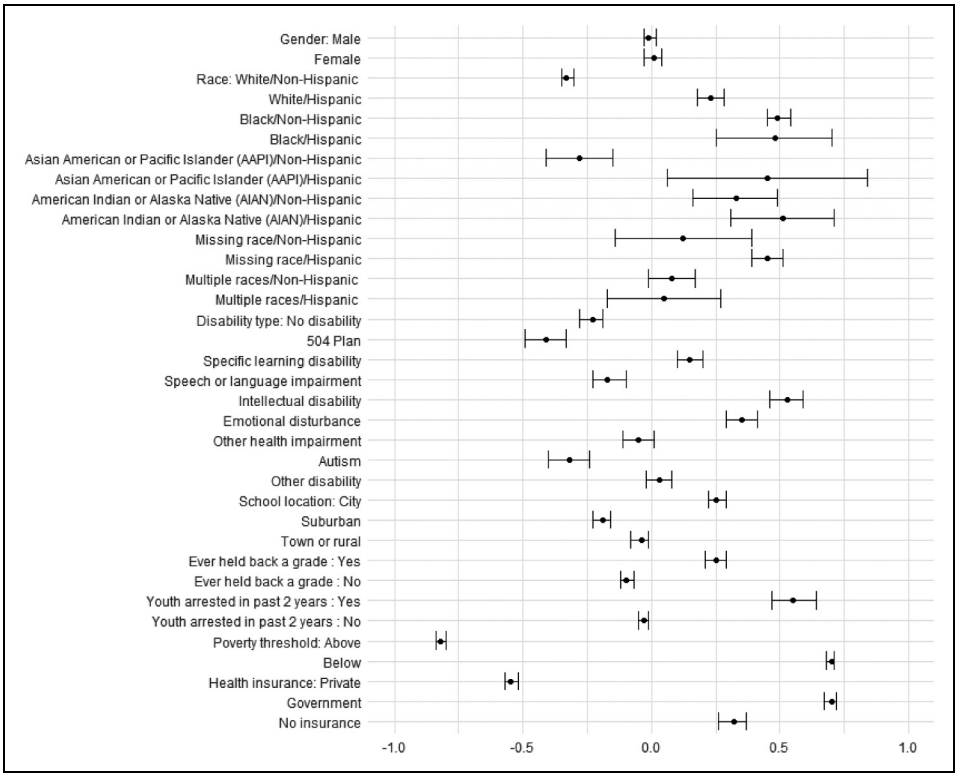

Figure 1. Economic hardship mean factor score and 95% confidence intervals across validation measures.

SRMR = 0.090) showed poor model fit. The standardized factor loading for the indicator *number of adults in the household* failed to meet the 0.40 threshold and was estimated to be 0.36, which in turn translates to an indicator reliability of 0.13; thus, we dropped this indicator and tested a more parsimonious six-indicator model.

Upon fitting the six-indicator model, we still observed a significant test of exact fit ($\chi^2_{df=9}$: 129.81, $p < .001$); however, approximate fit indices showed an improvement in approximate fit: CFI = 0.97, TLI = 0.95, RMSEA = 0.038 [.032, 044], and SRMR = 0.061. The highest standardized factor loading was in income level (0.94), followed by employment (0.78), social program participation (0.73), one- or two-parent household (0.64), household internet access (0.60), and education (0.53). Given this six-indicator model showed moderate-to-high factor loadings (>0.40) and reproduced the observed polychoric correlation matrix to an acceptable degree, we settled on this version as our final measurement model of economic hardship.

Validity Analysis

To establish criterion-related validity and meaningfully interpret group differences, we standardized the economic hardship factor score with a mean of 0 and standard deviation of 1 for group mean comparisons. Table 2 provides the descriptive statistics, standardized factor mean scores, and 95% confidence intervals by group. Notably, in terms of household income relative to 185% of the federal poverty level, the mean economic hardship factor score was greater for those identified below the poverty level than for those above ($M = 0.70$ vs. $M = -0.82$, $d = 2.29$). For race and ethnicity, the highest mean scores of economic hardship resulted for certain groups—AIAN Hispanic ($M = 0.51$), Black non-Hispanic ($M = 0.49$), Black Hispanic ($M = 0.48$), AAPI Hispanic ($M = 0.45$), and missing-race Hispanic ($M = 0.45$)—whereas the lowest mean scores of economic hardship were for White non-Hispanic ($M = –0.33$, $d = 0.88$) and AAPI non-Hispanic ($M = –0.28$). The greatest difference was between AIAN Hispanic and White non-Hispanic ($d = 0.88$). For disability type, the mean economic hardship factor score was greatest for youth with intellectual disability ($M = 0.53$), followed by youth with emotional disturbance ($M = 0.35$) and specific learning disability ($M = 0.15$), whereas lower mean scores resulted for youth with 504 plans ($M = –0.41$), youth with autism ($M = –0.32$), and youth with no disability ($M = –0.23$). The greatest difference was between youth with intellectual disability and youth on 504 plans ($d = 1.00$). In terms of health insurance, the economic hardship factor mean score was greatest for youth with government-assisted or public health plans ($M = 0.70$), followed by youth with no insurance ($M = 0.32$), and lowest for youth with private health insurance ($M = –0.55$, $d = 1.58$). Households in cities had a higher factor score mean of economic hardship compared with those who lived in town or rural areas ($M = 0.25$ vs. $M = –0.04$, $d = .30$), and the lowest mean economic hardship was for those who lived in suburban areas ($M = 0.25$ vs. $M = –0.19$, $d = .44$). Youth who were held back a grade showed greater economic hardship compared with those who were not \held back ($M = 0.25$ vs. $M = –0.10$, $d = 0.36$). Youth who had been arrested in the past 2 years showed greater economic hardship than those who had not ($M = 0.55$ vs. $M = –0.03$, $d = 0.61$).

Discussion

The current study was designed to conceptually replicate a multiple-indicator construct of economic hardship among adolescents with and without disabilities. A six-indicator, one-factor economic hardship model provided adequate fit to the NLTS2012 data and closely aligned with findings of a previous study using NLTS2 data (Murray et al., 2015). Establishing the multi-indicator construct advances our understanding of poverty by recognizing the multiple factors that define economic hardship beyond income and food costs. This conceptual replication study is unique in that a latent construct that was previously created using an earlier iteration of a national data set (NLTS2) was confirmed with an updated national sample (NLTS2012) of youth with and without disabilities. Although conceptual replication studies have

Table 2. Descriptive Statistics for Validation Measures.

Variable	*n*	*M*	*SD*	*SE*	95% CI
Poverty					
Above	4,220	–0.82	0.68	0.01	[–0.84, –0.80]
Below	4,940	0.70	0.65	0.01	[0.68, 0.71]
Gender					
Male	5,690	–0.01	0.99	0.01	[–0.03,0.02]
Female	3,540	0.01	1.01	0.02	[–0.03,0.04]
Race and ethnicity					
White non-Hispanic	4,580	–0.33	0.98	0.01	[–0.35, –0.30]
White Hispanic	1,290	0.23	0.86	0.02	[0.18, 0.28]
Black non-Hispanic	1,680	0.49	0.91	0.02	[0.45, 0.54]
Black Hispanic	80	0.48	0.96	0.11	[0.25, 0.70]
AAPI non-Hispanic	230	–0.28	1.01	0.07	[–0.41, –0.15]
AAPI Hispanic	30	0.45	0.98	0.19	[0.06, 0.84]
AIAN non-Hispanic	120	0.33	0.91	0.08	[0.16, 0.49]
AIAN Hispanic	80	0.51	0.93	0.10	[0.31, 0.71]
Missing-race non-Hispanic	50	0.12	0.94	0.13	[–0.14, 0.39]
Missing-race Hispanic	570	0.45	0.75	0.03	[0.39, 0.51]
Multiple-races non-Hispanic	450	0.08	1.00	0.05	[–0.01, 0.17]
Multiple-races Hispanic	70	0.05	0.90	0.11	[–0.17,0.27]
Disability type					
No disability	1,550	–0.23	0.94	0.02	[–0.28, –0.19]
504 plan	540	–0.41	0.96	0.04	[–0.49, –0.33]
Specific learning disability	1,320	0.15	0.94	0.03	[0.10, 0.20]
Speech or language impairment	880	–0.17	0.96	0.03	[–0.23, –0.10]
Intellectual disability	760	0.53	0.91	0.03	[0.46, 0.59]
Emotional disturbance	970	0.35	0.94	0.03	[0.29, 0.41]
Other health impairment	990	–0.05	1.00	0.03	[–0.12, 0.01]
Autism	640	–0.32	0.99	0.04	[–0.40, –0.24]
Other disability	1580	0.03	1.02	0.03	[–0.02, 0.08]
Health insurance					
Private	4,950	–0.55	0.86	0.01	[–0.57, –0.52]
Government	3,510	0.70	0.72	0.01	[0.67, 0.72]
No insurance	730	0.32	0.76	0.03	[0.26, 0.37]
Youth ever held back a grade					
Yes	2,530	0.25	0.94	0.02	[0.21, 0.29]
No	6,660	–0.10	1.00	0.01	[–0.12, –0.07]
Youth arrested in past 2 years					
Yes	440	0.55	0.91	0.04	[0.47, 0.64]
No	8,780	–0.03	1.00	0.01	[–0.05, –0.01]
School location					
City	2,750	0.25	0.98	0.02	[0.22, 0.29]
Suburban	3,010	–0.19	1.00	0.02	[–0.23, –0.16]
Town or rural	3,130	–0.04	0.96	0.02	[–0.08, –0.01]

Source. U.S. Department of Education, National Center for Education Statistics (NCES), National Longitudinal Transition Study (NLTS), 2012.

Note. Group sizes are rounded to the nearest 10 per NCES, Institute of Education Sciences data security guidelines for restricted-use license holders. CI = confidence interval; AAPI = Asian American or Pacific Islander; AIAN = American Indian or Alaska Native.

been explored within intervention research (Cook et al., 2016; Therrien et al., 2016), less attention has been given to replication across large-scale data sets.

In fact, there are few published studies that describe replications with NLTS data. In one study, self-determination constructs were confirmed using NLTS2 data (Shogren et al., 2014)

and later replicated with NLTS2012 data (Qian et al., 2022). Although Qian and colleagues (2022) described one aim of their study was "to replicate and extend previous studies that used NLTS2 data" (p. 247), the term "replication" was not used in their research questions, title, or abstract; rather, they framed it as reexamining differences between two national samples a decade apart. Two other studies described replication as the examination of similar established constructs but with other subgroups of youth with disabilities (e.g., learning disabilities, intellectual disability) using only the NLTS2 data (Dell'Armo & Tassé, 2019; Erickson et al., 2015). These examples suggest replication research is and has been occurring in special education, yet researchers are not actually using the term "replication" to describe their work (Coyne et al., 2016). As such,

our study findings demonstrate a different type of replication within special education research and furthermore highlight the lack of published replication studies particularly with secondary analyses of large-scale national data sets.

Moreover, among those identified replication studies in the special education literature (0.5%), even fewer of these replication studies were conducted by an entirely different set of authors (Makel et al., 2016). It is worth noting that the current study has no overlapping authors with the original Murray et al. (2015) study. Makel and colleagues (2016) reported the results were replicated two thirds of the time when there was one or more overlapping authors. Therefore, the current findings not only address a type of replication not well represented in the literature but also show an example of a replicated study with nonoverlapping authors.

Youth with intellectual disability showed the greatest amount of economic hardship ($M = 0.53$, $SD = 0.91$), followed by youth with emotional disturbance ($M = 0.35$, $SD = 0.94$). Thus, replicated findings across two national samples show that youth with intellectual disability and those with emotional disturbance experience more economic hardship than other youth. Conversely, youth from almost all disability types who were receiving special education supports and services showed greater economic hardship than youth with 504 plans and those without disabilities. Notably, youth with 504 plans experienced the least amount of economic hardship. As shown in Table 2, youth with autism had low economic hardship scores ($M = -0.32$, $SD = 0.99$) and were most similar to youth with 504 plans ($M = -0.41$, $SD = 0.96$) and youth without disabilities ($M = -0.23$, $SD = 0.94$). These findings are not replications, but they build on Murray et al.'s (2015) study by focusing on distinct groups that were not previously included or were not separated out (e.g., Murray et al. included autism along with several other categories as "other disability" and did not include youth on 504 plans and those without disabilities).

According to our group mean comparisons (see Table 2 and Figure 1), youth of color showed greater economic hardship than White non-Hispanic youth. In Murray et al.'s (2015) study, findings indicated significant differences in economic hardship based on race. Specifically, White youth had less economic hardship than youth of color (Black and Hispanic youth). Our study takes into account both race and ethnicity variables (Lombardi et al., 2022), a departure from the published NLTS-based studies, where the tendency is to focus on the largest groups of youth and treat race and ethnicity as the same concept (e.g., Black, Hispanic, and White; Newman et al., 2021; Qian et al., 2021) and include a group titled "Other" for all individuals who do not identify with the three largest categories (Murray et al., 2015; Trainor et al., 2019). The current study demonstrates finer group differences when both race and ethnicity are considered, illustrating the complex nature of measuring both.

Ongoing work is needed to specifically examine issues related to intersectionality and the impact of multiple forms of marginalization on the economic outcomes and needs of youth with disabilities as they transition from school to adult life.

Limitations

Several limitations must be acknowledged in the current study. First, the economic hardship factor was based on the available items in the NLTS2012 data set. Though we managed to include different relevant indicators for the construct, the variable selection was constrained by the design of NLTS2012 and hence the reason for a conceptual rather than direct replication. Second, we grouped the students into 12 race and ethnicity types and nine disability types, but we did not examine interactions between disability, race, and ethnicity groupings. Further work is needed to explore these intersecting factors. Finally, the sample had more males (62%) than females (38%), but these proportions were identical to Murray et al. (2015).

With respect to our examination of criterion-related validity, we used generated factor scores based on the full sample rather than taking a multiple group CFA approach to examine measurement invariance—this was intentional. First, the Murray et al. (2015) study did not examine measurement invariance; therefore, in the spirit of replicating the previous study, we did not undertake these analyses. Second, by using variables that have a clear connection to economic hardship (e.g., health insurance status or provider, 185% above the poverty level, youth ever been arrested or held back a grade) for validation purposes, this provided an opportunity to determine whether the economic hardship factor scores translated to meaningful group differences with theoretical backing.

Implications for Future Research

This study demonstrates the utility of a combination of indicators of economic hardship that might be useful to consider in future studies both to understand the needs of transition-age youth and to further explore the multiple impacts that marginalized youth face as they attempt to work toward their postschool goals. Figure 1 highlights the wide variability based on disability category and need for special education services. This suggests the need for ongoing research examining the impact of disability type and the resulting support needs on financial resources and opportunities, particularly, structural factors (e.g., high costs related to disability-related needs, bias and stigma in society and in supports and services) that may impact opportunities and further economic hardship.

By examining other factors that are associated with economic hardship, including disability, race and ethnicity, and educational experiences (e.g., held back a grade), we can better understand the impacts on youth who experience multiple marginalized identities as many studies in secondary transition focus on disability category only (Trainor et al., 2020).

Our findings highlight not only the complexity of understanding economic hardship and its impacts but also the need to consider issues related to intersectionality and marginalization in existing social structures (e.g., access to education, health insurance, social programs).

This is particularly important in the context of transition services, as the financial supports young people will need as they transition from adolescence to adulthood must be considered. Ultimately, our findings provide a rich definition of economic hardship replicated across multiple national large-scale data sets that will allow for a more holistic examination of intersectional student characteristics (Trainor et al., 2020) in the context of secondary special education and transition.

Results might inform ongoing research about the supports that multiply marginalized youth with disabilities need as they transition to adult life. The current findings only begin to reveal the importance of closely examining student characteristics such as race and ethnicity alongside disability category as well as structural factors, such as access to educational opportunities, health insurance, government assistance programs, and other supports within secondary special education and transition research. Specifically, including these predictors in experimental and correlational research is important to consider in the design of future studies.

Implications for Practice

Disability-related costs that create hardships in adult life are not emphasized enough as part of transition planning. Using a cultural lens (Trainor et al., 2020), results from this study inform the transition field to consider intersectional student characteristics beyond disability category to determine support needs as well as structural barriers that result from inequitable opportunities and supports. The combination of indicators demonstrated over two national samples could inform screening efforts. The additional variables that we used in the current study may provide more detail about students in need of more intensive supports in more meaningful ways. Taking these variables into consideration during the transition planning process could help secondary special educators to better tailor transition services toward diverse youth. Further, identification of youth with greater economic hardship may help connect these youth and their families with state and national aid and assistance programs sooner so they are better equipped to navigate adult services later in life. We anticipate our findings will inform transition professionals as well as school counselors and school and district leaders on the importance of planning for and seeking to understand the totality of youth and their families' experiences and advance the provision of culturally responsive transition services and college- and career-readiness supports that seek to advance economic and educational equity for *all* students, with and without disabilities.

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