



ELSEVIER

JOURNAL OF
ADOLESCENT
HEALTH
www.jahonline.org

Original article

Health and Well-Being at the Transition to Adulthood Among Individuals With Disabilities: An Analysis of the Panel Study of Income Dynamics



Emily Hotez, Ph.D.*¹, Mengtong Pan, B.S., Nicholas Jackson, Ph.D., M.P.H., Julianna Rava, M.P.H., Lauren E. Wisk, Ph.D., Yvonne Lei, M.D., Adam Schickedanz, M.D., Ph.D., and Alice A. Kuo, M.D., Ph.D., M.B.A.

Department of General Internal Medicine & Health Services Research, University of California, Los Angeles (UCLA), David Geffen School of Medicine, Los Angeles, California

Article history: Received May 10, 2023; Accepted December 11, 2023

ABSTRACT

Purpose: To describe positive mental health, or “flourishing,” and self-reported health trajectories among transition-aged young adults (TAYA) with developmental/learning and physical disabilities over a 12-year period, utilizing a population-based sample.

Methods: This study features a secondary analysis of national data from the Panel Study of Income Dynamics Transition to Adulthood Supplement. The analytic sample included all TAYA with ($n = 487$) and without ($n = 810$) disabilities, including developmental/learning disabilities (DD/LD), attention deficit hyperactivity disorder (ADHD), and speech, hearing, and vision impairments who participated in 2017 Transition to Adulthood Supplement data collection ($n = 1,297$; M age = 24.5, $standard deviation = 2.40$). We utilized linear mixed modeling to retrospectively describe flourishing and self-reported health trajectories across 12 years among TAYA with and without disabilities between ages 18 to 28, adjusting for demographic and developmental characteristics.

Results: Relative to TAYA without disabilities, TAYA with speech [0.10, 0.85] and vision impairments [0.10, 0.92], DD/LD [0.38, 1.11], and ADHD [0.27, 0.97] demonstrated lower flourishing. TAYA with speech [0.07, 0.36] and vision impairments [0.08, 0.38], DD/LD [0.15, 0.411], and ADHD [0.14, 0.93] reported lower health. Relative to TAYA with other disabilities, TAYA with ADHD [0.14, 0.93] and DD/LD [0.01, 0.29] reported lower flourishing and health, respectively. Interaction effects and descriptive analyses revealed distinct patterns of change for TAYA with ADHD.

Discussion: TAYA with disabilities report lower flourishing and health, relative to TAYA without disabilities. TAYA with specific disabilities differ in their flourishing and health trajectories. Findings can inform the development of interventions for TAYA with disabilities.

© 2023 Society for Adolescent Health and Medicine. All rights reserved.

IMPLICATIONS AND CONTRIBUTION

This research addresses the significant methodological and conceptual gaps in research on transition-aged (18–28-year-old) young adults with disabilities. Findings from the current study are translatable to individual-level and system-level interventions that seek to promote health among transition-aged young adults with disabilities across practice, research, education, and policy spheres.

Conflicts of interest: The authors have no example of conflicts of interest to disclose.

* **Address correspondence to:** Emily Hotez, Ph.D., Department of General Internal Medicine & Health Services Research, University of California, Los Angeles (UCLA), David Geffen School of Medicine, 911 Broxton Ave, Los Angeles, CA 90024.

E-mail address: ehotez@mednet.ucla.edu (E. Hotez).

The transition to adulthood—conceptualized differently throughout the literature as a developmental period spanning ages 12 to 26—is a developmental period characterized by change and instability in health care, education, employment, and interpersonal domains. The current study focuses on transition-aged young adults (TAYA) who are 18–28 [1]. TAYA

experience disproportionate mental health challenges—such as depression, anxiety, eating disorders, substance use, self-injury, and suicide [2]—and fluctuations in their positive mental health, or “flourishing” (i.e., subjective social, emotional, and psychological well-being) [3]. Flourishing is a critical component of overall health and predicts overall physical health and mortality [4]. TAYA may also experience an onset of physical health issues such as obesity, hypertension, and pre-diabetes [5]. Negative health at the transition to adulthood has critical implications for health trajectories into adulthood [6]. TAYA health challenges have been attributed to many factors, including health-care fragmentation, barriers to implementing health-promoting lifestyle behaviors, and low treatment adherence and access [1].

TAYA with disabilities—including those with intellectual and/or developmental disabilities (e.g., attention deficit hyperactivity disorder (ADHD), autism, cerebral palsy, learning disabilities, seizures, and developmental delays, with or without intellectual impairment), as well as physical disabilities (e.g., blindness or hearing impairment)—experience markedly worse health outcomes relative to their counterparts without disabilities. Indeed, although TAYA with disabilities are highly heterogeneous, many TAYA with disabilities experience health challenges beyond those experienced among the general TAYA population [7], attributable to a range of circumstances, including lack of physician training on this population and experiences of life course stigma, discrimination, and chronic stressors [8].

Although health challenges for TAYA with disabilities are well-documented, there remain significant gaps in the literature that thwart health-promotion efforts for this population. Specifically, there is limited research that adapts a *neurodiversity-oriented approach*—that is, research that seeks to inform interventions that are a) designed to be responsive to the diverse needs of individuals across the life course and b) focused on promoting health, well-being, and quality of life [9]. A neurodiversity-oriented approach to research is highly applicable to individuals with a wide range of disabilities, as its overall aim to create interventions that are flexible—rather than rigid—so that they can be adapted for maximal accessibility and inclusivity. A lack of neurodiversity-oriented research surfaces in several ways.

First, there is a lack of research on flourishing among TAYA with disabilities, partially due to the alignment of most research on TAYA with disabilities with deficit-based models of disability. Two previous studies from Canada and Finland have identified that individuals with ADHD had lower “complete mental health” (i.e., absence of mental illness, substance dependence, and suicidality coupled with the presence of happiness, life satisfaction, and well-being) [10] and flourishing [11]. Another found that caregiver ratings of well-being among their TAYA children were significantly lower relative to ratings from caregivers of TAYA without disabilities [12]. To be sure, flourishing is a relatively new area of research. It is typically captured by the Mental Health Continuum—Short Form [13], which captures dimensions of flourishing such as self-reported ability to contribute to society (social well-being); feeling satisfied with life (emotional well-being); and experiences that challenge the individual to grow and become a better person (psychological well-being). There is a need to validate flourishing measures for clinical assessment and population-health research to collect additional flourishing data [14].

Second, research has traditionally focused exclusively on comparing TAYA with disabilities to their nondisabled counterparts, rather than capture the vast heterogeneity within this population. This limitation impedes an understanding of the distinct experiences of individuals with specific disabilities and promotes ableism in research, policy, and practice [15]. In addition, there is a lack of self-reported health data among TAYA with disabilities. Research has identified a significant link between self-reported health status and subsequent mortality in diverse national samples [16]. The majority of research on TAYA with disabilities, however, relies on caregiver report and does not assess self-reported, subjective experiences of health. To be sure, existing studies on self-reported well-being among TAYA with disabilities has yielded important insights [17,18]. The paucity of research in this area is, however, a significant gap in the field, given the questionable validity of proxy data for this population [19]. Further, reliance on caregiver proxy data thwarts the promotion of self-determination and agency among TAYA with disabilities in research and practice [20].

Finally, there is a dearth of research on TAYA with disabilities from population-based samples. Indeed, individuals with disabilities are often excluded from research, with individuals with intellectual and developmental disabilities found to be included in only 2% of 300 randomized controlled trials published in the top-tier medical journals, often due to arbitrary exclusion criteria [21].

The current study aims to address the lack of available neurodiversity-oriented research by conducting a secondary analysis of the Panel Study of Income Dynamics (PSID): the longest running household panel study in the world [22]. This study utilizes a longitudinal cohort design to retrospectively describe flourishing and self-reported health trajectories among TAYA with and without disabilities captured in the 2017 Transition to Adulthood Supplement (TAS).

Methods

Data sources and study sample

We utilized the PSID TAS as well as the Child Development Supplement (CDS). The PSID TAS began in 2005 to follow children from the original PSID cohort into young adulthood and includes information on flourishing, self-reported health, and sociodemographic characteristics for all participants. Through 2015, PSID participants were eligible for the TAS if they were born into PSID households, were cohort members in the 1997 PSID, and had reached 18 years old. Beginning in 2017, all PSID sample members aged 18–28 years were eligible for the TAS. The CDS provides data on children and their extended families; the original CDS included up to two children per household who were 0–12 years old in 1997, and followed those children over three waves, ending in 2007–2008. We utilized the CDS to obtain retrospective data on the TAS 2017 cohort. The PSID began in 1968 with a nationally representative sample of over 18,000 individuals living in 5,000 families in the United States. Information on these individuals and their descendants has been collected continuously since the PSID's inception.

Our analytic sample included TAYA with and without disabilities in the 2017 TAS (Without Disabilities: n = 810; With Disabilities: n = 487; Total: n = 1,297). Due to PSID sample “refresh” methods in 2017, we utilized the 2017 PSID weight variables to exclude individuals in the 2017 wave who did not

have prior data (n = 691). We linked all prior individual-level data available in the CDS and previous iterations of the TAS to describe individuals in our study sample. We included individuals with any of the following disabilities: developmental delays/learning disabilities (DD/LD), ADHD, and vision, hearing, and speech impairment. The sample of individuals with autism was too small to include in the current analysis (n = 18). This research was approved by the University of California, Los Angeles institutional review board (IRB#16-000927).

Predictor measures

Disability status was assessed utilizing a combination of caregiver-reports of whether a medical provider has ever diagnosed the child (CDS) or self-reported (TAS) diagnosis of DD/LD, ADHD, and/or vision, hearing, and speech impairment. The CDS ('97, '02, '04, and '14) asks caregivers, "has your doctor or health professional ever said that (CHILD) had (INSERT DISABILITY). The TAS asks TAYA, "During your childhood—that is, up to when you reached 18 years of age—did you have any of the following psychological, developmental, or behavioral conditions for 1 month or more?" Survey respondents were provided the following instructions: "Only mark 'yes' for conditions diagnosed by a doctor or health professional. A health professional includes nurse, physician's assistant, nurse practitioner, social worker, or counselor." If a disability was flagged in any year, an individual was coded as having that disability. Definitions and wording for each diagnosis assessed are provided in [Table 1](#).

Outcome measures

Positive mental health/flourishing. The Mental Health Continuum—Short Form measures positive mental health or "flourishing" and is comprised of 14 items, representing various feelings of positive mental health [13]. Respondents rate the frequency of each feeling in the past month on a six-point Likert scale. Flourishing is calculated as the sum of three subscales: self-reported emotional well-being, social well-being, and psychological well-being in the past month [13]. Emotional well-being assesses how often in the past month participants felt: 1) happy; 2) interested in life; and 3) satisfied. Psychological well-being assesses how often in the past month participants felt that they: 1) liked most parts of their personality; 2) were good at managing the responsibilities of their daily life; 3) had warm and

trusting relationships with others; 4) had experiences that challenge them to grow and become a better person; 5) were confident to think or express their own ideas and opinions; and 6) had a sense of direction or meaning to their lives. Social well-being assesses how often in the past month participants felt that they: 1) had something important to contribute to society and 2) belonged to a community, as well as how often they believed that 3) our society is becoming a better place for people; 4) people are basically good; and 5) the way our society works makes sense to them. The response options for the assessment items were on a 6-point scale ranging from "never" (score of 1) to "every day" (score of 6). The average scores from the three subscales were then summed (range of 1–18), with a higher score indicating higher levels of flourishing. Validation studies have found high internal and moderate test-retest reliability [23].

Self-reported overall health. Self-reported overall health is a well-validated and extensively used measure associated with outcomes such as mortality, mental health, and health-care use [24]. In our study, self-reported health was assessed by a single item in which participants rated their health as poor (1), fair (2), good (3), very good (4), or excellent (5), treated as a continuous score, with higher values indicating better health.

Covariates

The most recent, nonmissing demographic variables—age sex, race and/or ethnicity, family income, and caregiver education—were included as covariates in our primary analyses. We also included special education status (CDS: "Has he/she ever been classified by a school as needing special education?"), standardized mathematics (CDS, mathematics Applied Problem test scores), and reading scores (CDS, Broad Reading scores [created from the Passage Comprehension and Letter Word scores]) in all regression models to control for developmental and cognitive characteristics.

Statistical analysis

We used linear mixed modeling analysis in R (version 4.1.0) using the nlme package for linear and nonlinear mixed effects models with random intercept for person. Models were fit with a participant random intercept and with independent residuals for those with and without disability. We tested for

Table 1
Predictor variables and survey items

Predictor variables	CDS ('97, '02, '04, '14) Survey item(s)	TAS ('17) Survey item(s)
	<i>Has your doctor or health professional ever said that (CHILD) had ...</i>	<i>During your childhood - that is, up to when you reached 18 years of age - did you have any of the following psychological, developmental or behavioral conditions for one month or more?</i>
Developmental delay or learning disability	<ul style="list-style-type: none"> • Developmental delay • Developmental problems, such as developmental delay or learning disability 	<ul style="list-style-type: none"> • Any other learning disability • Any other developmental delay
ADHD	<ul style="list-style-type: none"> • Hyperactivity, ADHD, or ADD 	<ul style="list-style-type: none"> • Attention deficit disorder (ADD) or attention deficit hyperactivity disorder (ADHD)
Vision impairment	<ul style="list-style-type: none"> • Serious difficulty seeing or blindness 	<ul style="list-style-type: none"> • Serious difficulty seeing that could not be corrected with standard glasses or contact lenses
Hearing impairment	<ul style="list-style-type: none"> • Serious hearing difficulty or deafness 	<ul style="list-style-type: none"> • Serious difficulty hearing or deafness
Speech impairment	<ul style="list-style-type: none"> • Speech impairment or delay 	<ul style="list-style-type: none"> • Speech impairment or delay

CDS = Child development supplement; TAS = Transition to Adulthood Supplement; ADD = Attention deficit disorder; ADHD = Attention deficit hyperactivity disorder.
Note: An equivalent question format was available for autism; sample size was too small n < 30 to include findings on autism in the current study.

the following: 1) main effects to determine whether overall flourishing & self-reported health levels were significantly lower or higher over time among TAYA with a particular disability, relative to those with a different disability, as well as those without any disability and 2) interaction effects to determine whether age-related patterns in overall flourishing and self-reported health were significantly different for TAYA with particular disabilities, relative to those with a different disability and those without any disability. We obtained marginal means from the fully adjusted models to identify whether the average flourishing and self-reported health scores were significantly lower among individuals with specific disabilities, relative to those with different or no disabilities. We analyzed the magnitude of the between-group differences to identify changes across the age span in flourishing and health and aimed to descriptively categorize patterns in these changes across our disabilities.

Results

Table 2 displays demographic characteristics for the sample. The sample included 1,297 participants between the ages of 18 and 28 (M age = 21.5, standard deviation (SD) = 2.40) with an average participation of 3.59 waves across the study period. The sample included those without disabilities (M age = 24.3, SD = 24.0, n = 810) and with disabilities (M age = 24.7,

SD = 2.4, n = 487). Those with a disability were less likely to be female (35% vs. 58%), were older in the 2017 TAS sample by approximately 5 months, had caregivers with slightly less education (approximately 0.5-year difference), had a different racial makeup (less likely to be of Asian race), and were more likely to have been in special education (38% vs. 6%). These variables, as well as the other aforementioned covariates above, were adjusted for in the analyses in or to minimize confounding.

The majority was White (n = 661, 73.5%), followed by Black (n = 548, 15.1%), Asian (n = 25, 3.5%), American Indian/Alaska Native (n = 9, 0.9%), and other (n = 3, 0.2%), with the remainder of sample missing race data (n = 51, 7.0%). The sample was 18.7% Hispanic (n = 157) and approximately half female (n = 868, 49.2%). The mean caregiver education level was 14.30 years (SD = 2.5) and the mean family income was \$78,597 (SD = \$77,950). More than one third reported having one or more disability (n = 487, 39.3%). Of those with disabilities, the most frequently reported disability was DD/LD (n = 220, 46.7%), followed by ADHD (n = 204, 43.30%); speech impairment (n = 167, 38.4%); vision impairment (n = 125, 20.5%); and hearing impairment (n = 53, 10.8%).

Table 3 presents the results from the linear mixed models, assessing the predictive role of each disability in flourishing and self-reported health trajectories and providing marginal means from fully adjusted models. Marginal means and comparisons

Table 2
Sample characteristics

Characteristic	Participants Overall	Participants Without disability	Participants With disability	<i>p</i>
Race, N (%)				.014
White	661 (73.5%)	408 (73.1%)	253 (74.0%)	
Black	548 (15.1%)	344 (14.7%)	204 (15.7%)	
AI/AN	9 (0.9%)	5 (0.5%)	4 (1.4%)	
Asian	25 (3.5%)	22 (5.3%)	3 (0.7%)	
Other	3 (0.2%)	2 (0.1%)	1 (0.3%)	
Missing	51 (7.0%)	29 (6.4%)	22 (7.8%)	
Ethnicity, N (%)				
Spanish, Hispanic, or Latino	157 (18.7%)	101 (19.0%)	56 (18.3%)	.81
Gender, N (%)				
Female	686 (49.2%)	487 (58.4%)	199 (35.0%)	<.001
Age in 2017, mean (SD)	24.5 (2.4)	24.3 (2.4)	24.7 (2.4)	.047
Caregiver education (years), mean (SD)	14.3 (2.5)	14.5 (2.5)	14.0 (2.5)	.005
Family income, mean (SD)	78,597 (77,950)	79,937 (70,715)	76,525 (87,155)	.59
Type of disability, N (%)				
Speech impairment			167 (38.4%)	
Developmental delay & learning disability			220 (46.7%)	
ADHD			204 (43.3%)	
Hearing impairment			53 (10.8%)	
Vision impairment			125 (20.5%)	
Autism			18 (4.3%)	
Number of disabilities, N (%)				
One			284 (57.8%)	
Two			133 (27.0%)	
Three			50 (10.3%)	
Four or more			20 (4.8%)	
Special education receipt, N (%)		43 (5.9%)	179 (37.5%)	<.001
Approximate age at diagnosis (years), mean (SD)				
Speech impairment			8.6 (4.8)	
Developmental delay & learning disability			10.1 (3.8)	
ADHD			12.7 (5.7)	
Hearing impairment			9.1 (5.5)	
Vision impairment			12.4 (5.0)	

ADHD = Attention deficit hyperactivity disorder; AI/AN = American Indian/Alaska Native; SD = Standard deviation.

Categories for "type of disability" are not mutually exclusive.

Table 3

Flourishing and self-reported health linear mixed models

Outcome Disability	TAYA With specific disability Marginal Mean	TAYA With other disability Marginal Mean	TAYA Without disability Marginal Mean	Comparison: With other disability versus with specific		Comparison: Without disability versus with specific		Interaction w/Age p
				Difference Estimate [95% CI]	p	Difference Estimate [95% CI]	p	
Flourishing								
Speech	13.46	13.54	13.93	0.09 (-0.31, 0.48)	.666	0.47 (0.10, 0.85)	.014	0.632
DD/LD	13.20	13.73	13.95	0.54 (0.14, 0.93)	.008	0.75 (0.38, 1.11)	<.001	0.991
ADHD	13.31	13.65	13.93	0.35 (-0.03, 0.72)	.072	0.62 (0.27, 0.97)	<.001	0.049
Hearing	13.77	13.48	13.92	-0.29 (-0.83, 0.26)	.302	0.15 (-0.39, 0.69)	.582	0.254
Vision	13.41	13.55	13.92	0.14 (-0.31, 0.60)	.528	0.51 (0.10, 0.92)	.015	0.418
Self-Reported Health								
Speech	3.58	3.62	3.79	0.03 (-0.12, 0.18)	.667	0.21 (0.07, 0.36)	.004	0.636
DD/LD	3.52	3.67	3.80	0.15 (0.01, 0.29)	.039	0.28 (0.15, 0.41)	<.001	0.259
ADHD	3.56	3.64	3.79	0.08 (-0.07, 0.22)	.295	0.23 (0.11, 0.36)	<.001	0.777
Hearing	3.64	3.60	3.79	-0.04 (-0.24, 0.17)	.719	0.15 (-0.05, 0.36)	.137	0.084
Vision	3.56	3.62	3.79	0.06 (-0.11, 0.22)	.492	0.23 (0.08, 0.38)	.003	0.141

ADHD = Attention deficit hyperactivity disorder; CI = Confidence interval; DD/LD = Developmental delays/learning disabilities

All analyses adjust for sex, race, ethnicity, family income, age, head education, special education, mathematics Applied Problem test scores, and Broad Reading scores. Bolded values indicate statistical significance.

are provided for three groups: 1) TAYA with the specific disability; 2) TAYA with a different disability; and 3) TAYA without disability.

With respect to flourishing, TAYA with speech impairment (difference estimate = 0.47 [0.10, 0.85], $p = .014$); DD/LD (difference estimate = 0.75 [0.38, 1.11], $p < .001$); ADHD (difference estimate = 0.62 [0.27, 0.97], $p < .001$); and vision impairment (difference estimate = 0.51 [0.10, 0.92], $p = .015$) demonstrated significantly lower average scores relative to those without disabilities. TAYA with ADHD also demonstrated significantly lower flourishing relative to those with other disabilities (difference estimate = 0.54 [0.14, 0.93], $p = .008$). The magnitude of the between-group differences (i.e., interaction with age p) also changed across the age span for those with ADHD ($p = .049$).

Between-group interactions with age were not statistically significant at $p < .05$ for other groups.

With respect to self-reported health, TAYA with speech impairment (difference estimate = 0.21 [0.07, 0.36], $p = .004$); DD/LD (difference estimate = 0.28 [0.15, 0.41], $p < .001$); ADHD (difference estimate = 0.23 [0.11, 0.36], $p < .001$); and vision impairment (difference estimate = 0.23 [0.08, 0.38], $p = .003$) demonstrated significantly lower average scores relative to those without disabilities. TAYA with DD/LD demonstrated significantly lower self-reported health relative to those with different disabilities (difference estimate = 0.15 [0.01, 0.29], $p = .039$). The magnitude of the between-group differences (i.e., interaction with age p) did not change across the age span in self-reported health scores for any group.

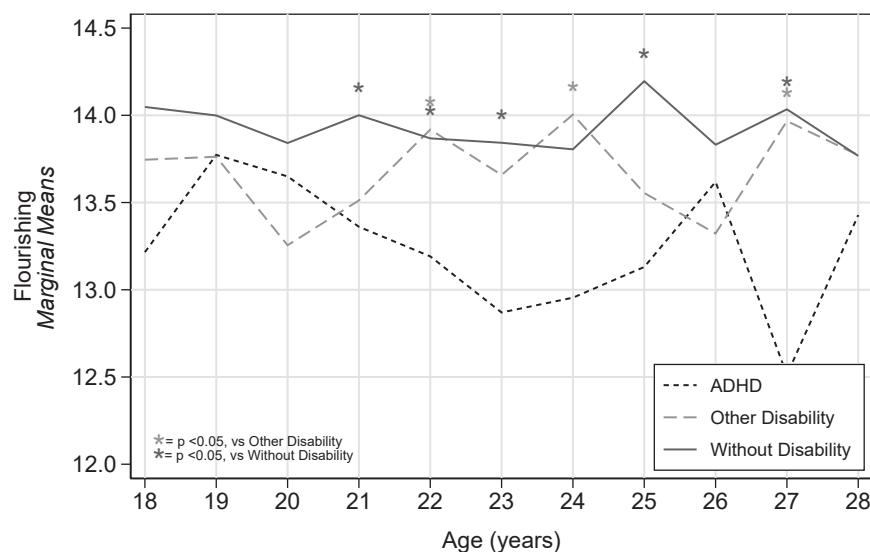


Figure 1. The interaction of age with ADHD on the flourishing outcome which was found to be significant in our analyses ($p = .049$). Asterisks are presented at the specific age(s) for which the groups significantly differed. The graphical depiction of this interaction suggests that flourishing decreases across the age-span for those with ADHD and potentially remains more stable for those without ADHD. Abbreviation: ADHD = attention deficit hyperactivity disorder.

Figure 1 shows the interaction of age with ADHD on the flourishing outcome which was found to be significant in our analyses ($p = .049$). Asterisks are presented at the specific age(s) for which the groups significantly differed. The graphical depiction of this interaction suggests that flourishing decreases across the age-span for those with ADHD and potentially remains more stable for those without ADHD.

Discussion

The current research featured a longitudinal study of a nationally representative sample of TAYA (aged 18–28) with and without disabilities utilizing the PSID: the longest running longitudinal household dataset in the world [22]. This study offered several novel contributions to the field. This study was among the few to capture positive mental health—or flourishing—among TAYA with disabilities. This is important given the role of flourishing in overall health and its predictive role in physical health and mortality [4]. This study was also unique in its utilization of self-report data, contrasting with the majority of previous studies' exclusive reliance on proxy assessment [25]. Taken together, this study was one of the few to apply a *neurodiversity-oriented* approach to population-based secondary data analysis. This study had several notable findings.

Overall flourishing and health trends

TAYA with almost every disability assessed demonstrated significantly lower average flourishing across the study period, relative to those without disabilities. Further, TAYA with ADHD experienced significantly lower flourishing over time, relative to those with different disabilities. This finding is consistent with available research on this topic [10,17,26]. We also found that TAYA with almost every disability had significantly lower self-reported health over time, relative to those without these conditions. This finding may be attributable to a range of factors well-documented in the literature, including lack of access to and utilization of high-quality care [1]. Further TAYA with disabilities may experience a range of challenges linked to poor health, including lower social participation [27]; stigma [28]; and chronic mental health conditions [29]. Research that explores facilitators and barriers to flourishing among TAYA with specific disabilities can further explain these patterns.

We also found a significant interaction between ADHD and age in predicting flourishing. Descriptive graphical depiction of these trends revealed that flourishing appeared to decrease across the age-span for those with ADHD and potentially remain more stable for those without ADHD. This aligns with the literature that shows that TAYA with ADHD experience significant health-care needs, high health-care costs [30], and low medication adherence [31]. Future research is needed to further understand continued challenges experienced by TAYA with ADHD. Additionally, we did not find significant interactions between other conditions and age. In this paper, we exclusively presented trajectory graphs for the statistically significant interactions. This ensured that the findings presented were meaningful and interpretable but did not capture potential descriptive trends between age and other conditions. In future research, this will be particularly important for DD/LD TAYA, given the findings we obtained for this population.

Implications for research, education, and practice

Research. This study highlights the need to conduct additional research using self-report and neurodiversity-oriented outcome assessments. There is a need to identify predictors of flourishing—to understand predictors of overall health as well as to predict and proactively address negative physical health outcomes and mortality—among TAYA with disabilities [4]. This will inform the development and testing of supportive interventions that can be scaled. Research in this area is emerging, with constructs such as gratitude and adaptation to disability identified as key contributors to flourishing [32].

Education. Physicians do not receive adequate disability-focused education and training [33] and are ill-equipped to support TAYA with disabilities [34]. Our findings lend support to emerging initiatives that seek to enhance medical curricula [35] and continuing education (e.g., AASPIRE) [36,37].

Practice. Findings suggest the need to develop and test interventions that promote flourishing for TAYA with disabilities. Indeed, such interventions have been found to address risk behaviors in the general TAYA population [38]. There is, however, a paucity of research on such interventions for TAYA with disabilities. Interventions that promote self-efficacy, emotional stability, and social support may be effective [39]. Health-care professionals may seek to promote these factors in their clinical interactions with patients or in quality improvement efforts. The COVID-19 pandemic spurred renewed interest in virtual supports and services for TAYA with disabilities and such approaches should be considered.

Our findings support the need for high-quality health-care transitions for TAYA with disabilities. Providers can refer to care coordination models such as the "Systematic Network of Autism Primary Care Services" for individuals with disabilities and their families, which seeks to create a model to support autistic individuals, with applications for a range of disabilities. The adaptation and uptake of clinical care models specifically attuned to those with disabilities may address the disparities found in TAYA with disabilities.

Limitations

There are several limitations. The PSID has historical limitations with measurement of disability status. Before 2003, disability data focused primarily on work limitations. Partially due to this limitation, previous research focusing on disability status within the PSID does not disaggregate findings by specific disability [40]. This impedes the number of previous PSID studies that we were able to rely on in our interpretation of findings. In addition, although the current study features separate longitudinal models for each disability, we were limited in the number of disabilities we were able to report on with sufficient power in our analysis and could not stratify by demographic characteristics. As a result, individuals with autism are excluded from this research and we are unable to describe potential subgroup differences. Additionally, the PSID measures are not necessarily reflective of emerging research on cognitively accessible self-report measures [41]. Finally, as with any study that requests retrospective information, there is always a potential for recall bias. Despite these limitations, the PSID is considered one of the most effective datasets at capturing longitudinal change among

individuals with disabilities [42]. Future research should seek to address these limitations—potentially utilizing a combination of different data sources or augmenting PSID data collection—in order to account for these shortcomings.

Conclusion

The current research featured a longitudinal study of a nationally representative sample of TAYA with disabilities utilizing the PSID. This study was one of the few to capture flourishing and self-reported health trajectories of this sample. Overall TAYA with disabilities had lower flourishing and health relative to those without disabilities across the 12-year period. There were significant differences in flourishing and self-reported health among TAYA with specific disabilities. TAYA with ADHD may experience particularly pronounced barriers to flourishing. This research underscores the need for research and interventions focused on TAYA with disabilities.

Acknowledgments

Findings from this research were presented as an abstract at the American College of Preventive Medicine (ACPM) Conference, June 2022, Denver, CO.

Funding Sources

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

- [1] Barlett CP, Barlett ND, Chalk HM. Transitioning through emerging adulthood and physical health implications. *Emerg Adulthood* 2020;8:297–305.
- [2] Duffy ME, Twenge JM, Joiner TE. Trends in mood and anxiety symptoms and suicide-related outcomes among US undergraduates, 2007–2018: Evidence from two national surveys. *J Adolesc Health* 2019;65:590–8.
- [3] Vasa RA, Hagopian L, Kalb LG. Investigating mental health crisis in youth with autism spectrum disorder. *Autism Res* 2020;13:112–21.
- [4] VanderWeele TJ, McNeely E, Koh HK. Reimagining health—flourishing. *JAMA* 2019;321:1667–8.
- [5] Ureña-Bogarín EL, Martínez-Ramírez HR, Torres-Sánchez JR, et al. Prevalence of pre-diabetes in young Mexican adults in primary health care. *Fam Pract* 2015;32:159–64.
- [6] Logical functioning, cognitive-affective strategies, and social well-being - Colleen S. Conley, Alexandra CNegotiating the transition to college: Developmental trajectories and gender differences in psycho. 2014. Available at: <https://journals.sagepub.com/doi/full/10.1177/2167696814521808>. Accessed July 18, 2022.
- [7] Krahm GL, Fox MH. Health disparities of adults with intellectual disabilities: What do We Know? What do We do? *J Appl Res Intellect Disabil* 2014;27: 431–46.
- [8] Pelleboer-Gunnink HA, Van Oorsouw W, Van Weeghel J, Embregts P. Mainstream health professionals' stigmatising attitudes towards people with intellectual disabilities: A systematic review. *J Intellect Disabil Res* 2017;61:411–34.
- [9] Kuo AA, Hotez E, Rosenau KA, et al. The autism intervention research Network on physical health (AIR-P) research Agenda. *Pediatrics* 2022;149: e2020049437D.
- [10] Fuller-Thomson E, Ko BKD, Carriqué L, MacNeil A. Flourishing despite attention-deficit hyperactivity disorder (ADHD): A population based study of mental well-being. *Int J Appl Posit Psychol* 2022;7:227–50.
- [11] Appelqvist-Schmidlechner K, Lämsä R, Annamari TH. Flourishing: Factors associated with positive mental health among young adults with neuro-psychiatric disorders. *Eur Psychiatr* 2017;41:S732–3.
- [12] Biggs EE, Carter EW. Quality of life for transition-age youth with autism or intellectual disability. *J Autism Dev Disord* 2016;46:190–204.
- [13] Keyes CLM. The mental health continuum: From languishing to flourishing in life. *J Health Soc Behav* 2002;43:207–22.
- [14] Levin J. Human flourishing: A new concept for preventive medicine. *Am J Prev Med* 2021;61:761–4.
- [15] Bogart KR, Dunn DS. Ableism special issue introduction. *J Soc Issues* 2019; 75:650–64.
- [16] McGee DL, Liao Y, Cao G, Cooper RS. Self-reported health status and mortality in a Multiethnic US cohort. *Am J Epidemiol* 1999;149:41–6.
- [17] Joseph A, Kosmas CE, Patel C, et al. Health-related quality of life and work productivity of adults with ADHD: A U.K. Web-based cross-sectional survey. *J Atten Disord* 2019;23:1610–23.
- [18] Smit AL, Burgers YRW, Swanenburg de Veye HFN, et al. Hearing-related quality of life, developmental outcomes and performance in children and young adults with unilateral conductive hearing loss due to aural atresia. *Int J Pediatr Otorhinolaryngol* 2021;142:110590.
- [19] Emerson E, Felce D, Stancliffe RJ. Issues Concerning self-report data and population-based data sets involving people with intellectual disabilities. *Intellect Dev Disabil* 2013;51:333–48.
- [20] Cheak-Zamora NC, Maurer-Batjer A, Malow BA, Coleman A. Self-determination in young adults with autism spectrum disorder. *Autism* 2020;24: 605–16.
- [21] Feldman MA, Bosett J, Collet C, Burnham-Riosa P. Where are persons with intellectual disabilities in medical research? A survey of published clinical trials. *J Intellect Disabil Res* 2014;58:800–9.
- [22] McGonagle KA, Schoeni RF, Sastry N, Freedman VA. The panel study of income Dynamics: Overview, recent Innovations, and potential for life course research. *Longit Life Course Stud* 2012;3:188.
- [23] Lamers SMA, Westerhof GJ, Bohlmeijer ET, et al. Evaluating the psychometric properties of the mental health Continuum-Short Form (MHC-SF). *J Clin Psychol* 2011;67:99–110.
- [24] Seeman TE, Singer BH, Rowe JW, et al. Price of adaptation—Allostatic Load and its health Consequences: MacArthur studies of Successful aging. *Arch Intern Med* 1997;157:2259–68.
- [25] Boström P, Åsberg Johnels J, Broberg M. Self-reported psychological well-being in adolescents: The role of intellectual/developmental disability and gender. *J Intellect Disabil Res* 2018;62:83–93.
- [26] Gjervan B, Torgersen T, Rasmussen K, Nordahl HM. ADHD symptoms are differentially related to specific aspects of quality of life. *J Atten Disord* 2014;18:598–606.
- [27] Shah K, Frank CR, Ehrlich JR. The association between vision impairment and social participation in community-dwelling adults: A systematic review. *Eye* 2020;34:290–8.
- [28] Godfrey E, Fuermaier ABM, Tucha L, et al. Public perceptions of adult ADHD: Indications of stigma? *J Neural Transm* 2020.
- [29] Crews JE, Chou CF, Sekar S, Saaddine JB. The Prevalence of chronic conditions and poor health among people with and without vision impairment, aged ≥65 Years. *Am J Ophthalmol* 2017;182:18–30. 2010–2014.
- [30] Babinski DE, Neely KA, Ba DM, Liu G. Depression and suicidal behavior in young adult men and Women with ADHD: Evidence from Claims data. *J Clin Psychiatry* 2020;81:22578.
- [31] Benham-Clarke S, Ford T, Mitchell SB, et al. Role of education settings in transition from child to adult health services for young people with ADHD. *Emot Behav Difficulties* 2021;26:341–58.
- [32] Phillips BN, Fleming AR, Bean B, et al. Relations among gratitude, adaptation to disability, and flourishing among adults with disabilities: A longitudinal mediation model. *Rehabil Psychol* 2022;67:546–55.
- [33] Iezzoni LI, Long-Bellil LM. Training physicians about caring for persons with disabilities: “Nothing about us without us!”. *Disability and Health Journal* 2012;5:136–9.
- [34] Agaronnik N, Campbell EG, Ressalam J, Iezzoni LI. Communicating with patients with disability: Perspectives of practicing physicians. *J Gen Intern Med* 2019;34:1139–45.
- [35] Sarmiento C, Miller SR, Chang E, et al. From impairment to Empowerment: A longitudinal medical school Curriculum on disabilities. *Acad Med* 2016; 91:954–7.
- [36] Nicolaidis C, Raymaker D, Kapp SK, et al. *AASPIRE* practice-based Guidelines for the inclusion of autistic adults in research as Co-Researchers and study participants. *Autism* 2019;23:2007–19.
- [37] *AASPIRE* healthcare Toolkit for autistic adults. Available at: <https://autismandhealth.org/?p=ahat>. Accessed July 24, 2022.
- [38] Sofija E, Harris N, Phung D, et al. Does flourishing reduce engagement in unhealthy and risky lifestyle behaviours in emerging adults? *Int J Environ Res Publ Health* 2020;17:9472.
- [39] Cohnres C, Mauz E. Self-efficacy and emotional stability Buffer negative effects of adverse childhood experiences on young adult health-related quality of life. *J Adolesc Health* 2020;67:93–100.
- [40] Laditka SB, Laditka JN, Hoyle JN. Disability in childhood, special education histories, and lifetime health outcomes in the United States. *J Aging Health* 2021;33:919–30.
- [41] Walton K, Krahm GL, Buck A, et al. Putting “ME” into measurement: Adapting self-report health measures for use with individuals with intellectual disability. *Res Dev Disabil* 2022;128:104298.
- [42] Putnam M, Molton IR, Truitt AR, et al. Measures of aging with disability in US. secondary data sets: Results of a scoping review. *Disability Health J* 2016;9:5–10.