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Confidence and Expectations Among Parents of and Students With Visual Impairments

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Abstract

Introduction: Education level and early work experiences predict future employment for students with visual impairments, but many do not work in high school or obtain a college degree. A research team developed *4to24*, an application (app) for students with visual impairments and their parents, to support students' transition to employment beginning in preschool. The purpose of this study was to explore parents' and students' confidence and expectations before and after using the app for 6 months.

Method: The sample comprised 24 parents of children with visual impairments and 19 students with visual impairments. Participants rated their confidence in their (or their child's) skills in seven domains and reported their expectations for future education, employment, and independence. We used descriptive statistics to summarize participants' confidence and expectations and examined changes in these measures over time.

Results: After using *4to24*, participants increased their confidence significantly in three areas: community travel, using public transportation, and self-care. Frequency of app use coincided with increased confidence in several domains and with increased expectations for educational attainment.

Discussion: Results provide initial evidence of associations between app use and increases in confidence and expectations for future postsecondary education; however, we cannot draw conclusions about causality from this exploratory study.

Application for Practitioners: The *4to24* app provides free information, resources, and activity suggestions directly to students and parents. It can be beneficial for encouraging

collaboration with practitioners, promoting high confidence and expectations, and reinforcing students' skills.

In the United States, many high school students with disabilities receive federally-mandated services that aim to support their transition to postsecondary education and employment. The Individuals with Disabilities Education Act (2004) mandates that students with disabilities begin receiving transition services by the age of 16 years. Students with disabilities may also receive transition services under the Rehabilitation Act of 1973, as amended by the Workforce Innovation and Opportunity Act (2014). However, preparation for the transition to adulthood should begin much earlier than high school for students with disabilities, including visual impairments (Crudden, 2012; Landmark et al., 2022).

Children with visual impairments also need sequential, systematic instruction in the Expanded Core Curriculum (ECC) to develop the concepts and skills that sighted children learn incidentally through visual observation (Hatlen, 1996; Sapp & Hatlen, 2010). The ECC includes the following nine areas: assistive technology, career education, compensatory skills, independent living skills, orientation and mobility (O&M), recreation and leisure, self-determination, sensory efficiency, and social interaction skills. Relationships between several ECC areas and postsecondary education or employment outcomes have been documented in the literature (Wolffe & Kelly, 2011). Starting ECC instruction in early childhood is instrumental in helping students develop critical prerequisite skills for postsecondary education and employment (Allman & Lewis, 2014; Nagle, 2001; Wolffe, 2007; Zabelski, 2007).

Youth with visual impairments have higher rates of postsecondary school attendance but lower postschool employment rates than youth without visual impairments (McDonnall, 2010; Sanford et al., 2011). A systematic review of factors

associated with employment for transition-age youth with visual impairments found some evidence supporting the benefits of the following variables: academic skills, assistive technology, career counseling, O&M, parental support, self-determination, and social skills (Lund & Cmar, 2020). The strongest and most consistent predictors of employment across studies were education level and early paid work experiences (Lund & Cmar, 2020). However, research indicates that most students with visual impairments did not work for pay during high school (Lipscomb et al., 2017) and many who enrolled in college did not complete their education and obtain a degree (Miller et al., 2020; Richardson & Roy, 2002; Schuck et al., 2019).

Parents and families play a key role in transition preparation for students with disabilities (Hirano & Rowe, 2016), including visual impairments (Zabelski, 2007). Results of a multiple-case study revealed several family-related variables that may contribute to positive outcomes for young adults with learning disabilities: family involvement, family support and advocacy, and intentional career planning activities (Lindstrom et al., 2007). In another qualitative study, rehabilitation professionals identified facilitators of positive transition outcomes for students with visual impairments, including high parental expectations; parental involvement in career planning; and communication between parents, students, and service providers (Crudden, 2012). Both studies documented the need to balance parental support and advocacy with opportunities for students to develop self-determination, take responsibility for their lives, and learn from their mistakes (Crudden, 2012; Lindstrom et al., 2007). Despite the importance of the abovementioned factors, only 74% of students with visual impairments (ages 17 years or older) and 64% of their parents attended a transition

planning meeting, and some attended but provided little to no input (Lipscomb et al., 2017). Furthermore, some parents of students with visual impairments identified a lack of information about postsecondary education options, employment opportunities, and career planning as challenges for their children (Lipscomb et al., 2017).

Little research has focused on the relationship between student or parent confidence and transition outcomes for students with visual impairments. One study indicated that low student confidence may deter some students from enrolling in college (Reed & Curtis, 2012). Another study found that self-confidence in finding and using transportation is an important predictor of employment for young adults with visual impairments (Cmar, McDonnall, & Crudden, 2018).

Additional research has focused on expectations for the future held by students with disabilities and their parents. Students with disabilities had higher expectations than their parents for postsecondary education, financial independence, and independent living (Kirby et al., 2019). Parent and student expectations predicted multiple outcomes for students with disabilities, including (a) postsecondary school enrollment or completion (Doren et al., 2012; Johnson et al., 2022; Kirby et al., 2019; Schuck et al., 2019); (b) postschool employment (Cmar, 2015; Cmar, McDonnall, & Markoski, 2018; Doren et al., 2012; Kirby et al., 2019; Wehman et al., 2015); (c) financial independence (Kirby et al., 2019); and (d) independent living (Kirby et al., 2019).

Using a 5-year, iterative, user-centered process, we developed *4to24*, an application (app) to support the transition to postschool employment for students with visual impairments, ages 4 to 24 years (Antonelli et al., 2021). Overall aims of *4to24*

include empowering parents to support their child's development, improving parents' expectations, and promoting students' independence and confidence. The app provides targeted, user-friendly informational modules to parents and older students covering the numerous concepts and skills that students with visual impairments need for future employment, including but not limited to all areas of the ECC. The app has a library of over 400 modules organized into 10 categories; each module contains age-appropriate information, resources, and activity suggestions on a given topic (Antonelli et al., 2021). The modules emphasize parental involvement throughout the student's education and encourage ongoing communication and collaboration with service providers. The app delivers modules with accompanying push notifications to users over time according to the student's profile and the user's interactions with the app (Antonelli et al., 2023).

The *4to24* app development process concluded with a 6-month field test during which parents and students tested the app and provided feedback. Most field test participants rated the app positively, and findings supported its usability and usefulness and the relevance of its content (Steverson et al., 2022). This article presents results of an exploratory study of field test participants' confidence levels and expectations for future education, employment, and independence before and after app use.

1. How confident were parents of students with visual impairments in their children's skills?
2. How confident were students with visual impairments in their own skills?
3. What were parents' expectations for their children's future education, employment, and independence?

4. What were students' expectations for their future education, employment, and independence?
5. Did participants' confidence and expectations change after 6 months of app use?
6. Did participants' confidence and expectations vary by frequency of app use?

Method

Procedure

The institutional review board at Mississippi State University reviewed and approved this study. Nationwide recruitment for the field test began in September 2019 through social media, an online participant registry, partner and consumer organizations, listservs, and educational institutions. Inclusion criteria included having access to the Internet at least once weekly and experience using phone or computer apps. Parent participants had to have a child between ages 4 and 24 years without a severe learning or cognitive disability who was eligible for special education, early intervention, or accommodations for visual impairment. Student participants had to be 16–24 years old, have a visual impairment, and receive or be eligible for special education services or accommodations.

After completing a prescreening survey to determine eligibility, parents and students provided consent (or parental permission and assent). Then, they completed a pretest, downloaded the *4to24* app, used it for 6 months (from January to August 2020), and completed a posttest. All surveys were administered via an accessible web-based survey platform. Participants received a $35 gift card after completion of the posttest. Overall, 139 individuals completed the prescreening survey, 127 met eligibility criteria and were invited to participate, and 61 enrolled in the study.

Participants

This study included 43 participants who completed the pretest and posttest: 24 parents and 19 students from 23 states. One parent and student were related. Most parent participants were female (*n* = 20, 83.3%). Parents' age ranges were 25–34 years (*n* = 5, 20.8%), 35–44 years (*n* = 10, 41.7%), 45–54 years (*n* = 4, 16.7%), and 55–64 years (*n* = 5, 20.8%). Most parents (*n* = 17, 70.8%) had a 2-year college degree or higher, and 79.2% (*n* = 19) earned $55,000 or more per year. Parent participants' children's ages ranged from 4–20 years (*M* = 11.38, *SD* = 3.98), whereas student participants' ages ranged from 16–22 years (*M* = 19.32, *SD* = 1.70). Table 1 provides additional demographic information about the children and students.

Measures

Confidence

Participants responded to a 7-item confidence measure at pretest and posttest. The items covered the following broad topics addressed through the app: (a) travel in the community with little or no assistance; (b) use public transit with little or no assistance; (c) use technology (including smartphone, computer, or assistive technology) with little or no assistance; (d) complete academic work; (e) have good social relationships; (f) work in a paid job; and (g) take care of self as appropriate for age (such as bathing, grooming, meals, clothing, and household chores). Parents rated their confidence in their child's ability to perform each task on a scale of 0 (*not at all confident*) to 10 (*totally confident*). For each item, parents could indicate that their child was too young for the task instead of rating their confidence. Students rated their confidence in their ability to perform each task using the same 0 to 10 scale.

Expectations

At pretest and posttest, participants responded to questions regarding their expectations for future education, employment, and independence, which were based on items from the National Longitudinal Transition Studies (NLTS; Burghardt et al., 2017; SRI International, 2000). Participants selected the highest level of schooling they thought they or their child would complete from the following six options: (a) less than high school; (b) high school diploma or GED; (c) technical or trade school; (d) 2-year college; (e) 4-year college; and (f) Master's degree, Ph.D., or other advanced degree. As done by Lipscomb et al. (2017), we used this item to create two dichotomous variables (0 = *no*, 1 = *yes*) to measure participants' expectations for (a) obtaining postsecondary education (i.e., technical or trade school or higher) and (b) obtaining a 4-year degree (i.e., 4-year college or higher).

Participants also rated how likely they or their child would do the following by age 30: (a) earn enough to support themselves without financial help from family or government benefit programs, (b) work in a career of their choice, and (c) live on their own. The response options for these three questions were definitely will, probably will, probably won't, and definitely won't; however, we collapsed them into two categories for analysis: "definitely or probably will" and "definitely or probably won't."

Data Analysis

We used descriptive statistics (i.e., means, standard deviations, and frequencies) to summarize participants' confidence ratings and expectations for the future at pretest and posttest. To examine changes from pretest to posttest for the combined sample of parents and students, we conducted dependent-samples *t* tests for the confidence items

and exact McNemar's tests for the expectations items. We also computed descriptive statistics for parents and students separately and by self-reported app use in the past 2 months (more than once a month vs. once a month or less). All analyses were conducted using SAS version 9.4.

Results

Table 2 provides descriptive statistics for the pretest and posttest confidence ratings and dependent-samples *t* test results. Tables 3 and 4 present average confidence ratings for parents and students and by app use, respectively, at pretest and posttest. During the last 2 months of the field test, 8 (33.3%) parents and 10 (52.6%) students used the *4to24* app more than once a month, whereas 16 (66.7%) parents and 9 (47.4%) students used it once a month or less. Most confidence ratings were on the higher end of the scale, and most posttest confidence ratings were similar to or slightly higher than pretest ratings. Participants' confidence ratings increased significantly from pretest to posttest for three items: travel in the community, use public transportation, and take care of self. Despite those increases, community travel and public transit were the lowest-rated confidence items among parents and students. In several areas, increases in confidence corresponded with frequency of app use.

As shown in Table 5, there were no significant changes in participants' expectations from pretest to posttest. Tables 6 and 7 present expectations at each time point for parents and students and by app use, respectively. Parents and students generally had high expectations for the future. Participants who used the app more frequently had slightly higher ratings for the postsecondary education and 4-year degree items at posttest compared to pretest.

Discussion

We used data from the *4to24* app field test to explore participants' confidence levels and expectations for the future. Parents of and students with visual impairments completed surveys before and after they used the *4to24* app for 6 months. Overall, participants had high confidence and expectations in most areas. They had significant increases in confidence ratings for community travel, using public transportation, and self-care after using the app. Frequency of app use coincided with increased confidence in some areas and with increases in expectations for future educational attainment.

Parents and students had the highest confidence in technology use, academic work, and self-care. Students' high confidence ratings are consistent with previous studies documenting high confidence and self-efficacy among students with visual impairments (Cmar & McDonnall, 2019; Farrand et al., 2018; Lipscomb et al., 2017). Participants had the lowest confidence in the two O&M-related skills: traveling in the community and using public transportation. Because we do not have objective measures of students' skills, we cannot determine whether students' and parents' confidence ratings reflected their (or their child's) skill levels in these areas.

When exploring changes in confidence by app use, the overall pattern of results implies several differences. Average confidence ratings for participants who used the app more than once a month were higher at posttest than pretest in five of the seven areas, but participants who used the app less frequently exhibited little to no changes in confidence. Considering that the field test overlapped with the COVID-19 pandemic's onset, the app could have been a beneficial resource for promoting ongoing learning and communication with service providers during this time. Participants who used the

app more than once a month increased their confidence the most for the two O&M-related skills, despite the profound impact of the pandemic on O&M service provision and hands-on learning in community settings (Fast & Kaiser, 2022; Rosenblum et al., 2020). Our findings provide preliminary evidence of an association between more frequent app use and higher confidence; however, given the study design, we cannot determine whether the app *caused* these changes. Other potential explanations for participants' increased confidence include (a) direct instruction and support from service providers; (b) learning and using new skills based on immediate needs (e.g., technologies for remote learning); and (c) increased family involvement in students' education, unrelated to the app. Numerous factors could have hindered participants' confidence, such as (a) changes or interruptions to services; (b) accessibility issues and other difficulties with remote learning; (c) lack of opportunities or motivation to practice skills; and (d) effects of the pandemic on health, well-being, or family (Wild et al., 2022). Those factors could have also influenced participants' frequency of app use.

At pretest and posttest, most students and parents had high expectations for their (or their child's) future education, employment, and independence; however, the high values observed at pretest left very little room for change during the field test. Participants' high expectations regarding employment, financial self-support, and independent living support the estimates for students with visual impairments from NLTS 2012 (Lipscomb et al., 2017). Parents' expectations regarding their children's future education were comparable to or higher than national estimates, whereas students' expectations for their future education were lower than national estimates (Lipscomb et al., 2017). Approximately 58% and 53% of students in our study expected

to obtain a 4-year degree at pretest and posttest, respectively, compared to 73% of students with visual impairments in NLTS 2012 (Lipscomb et al., 2017), which may relate to differences between the two samples. Still, students' low educational expectations are concerning and need further investigation, considering that completion of postsecondary education is a key predictor of employment for people with visual impairments (Lund & Cmar, 2019a, 2019b, 2020). Although we did not find any significant changes in expectations for the overall sample, our findings suggest that more frequent app use is associated with increases in expectations for educational attainment.

Limitations

Several limitations of this study are important to recognize when interpreting our results. One limitation relates to the size and composition of the field test sample. The sample was relatively small and not intended to represent the larger population, which prohibited the use of statistical analyses to compare sub-groups and may limit the generalizability of our findings. Furthermore, the surveys did not include questions about race, ethnicity, and level of vision. Because this study was exploratory and did not have a control group, we cannot draw conclusions about causality without additional research using an experimental design. Although the 6-month field test was sufficient for evaluating the *4to24* app and users' perceptions of it, a longer study would allow for extended interaction with the app and may provide further insight into changes in users' expectations and subsequent transition outcomes. Finally, the field test's overlap with the COVID-19 pandemic may have contributed to attrition, impacted participants' posttest responses, and reduced participants' engagement with the app as they shifted

their focus to their health, family, education, and other aspects of their lives that changed suddenly when the pandemic started.

Application for Practitioners

Despite these limitations, our results support the potential benefits of the *4to24* app for increasing parents' and students' confidence in several domains and their expectations for postsecondary education. Other ways service providers can promote high confidence and expectations of students and their parents include (a) encouraging them to participate in support groups and join parent or consumer organizations, (b) connecting them with mentors and role models, and (c) facilitating opportunities for parental involvement. Long cane competitions, White Cane Awareness Day events, and similar community activities may be beneficial in increasing parents' and students' confidence related to O&M.

Given the promising findings from this study, and previous evidence of the *4to24* app's content validity, usability, and relevance (Antonelli et al., 2021, 2023; Steverson et al., 2022), service providers may wish to share information about *4to24* with students and their families and encourage them to use it. The app contains content for several audiences: (a) parents of students with visual impairments (ages 4–24 years), (b) students with visual impairments (ages 16–24 years), and (c) parents of students who are deaf-blind and have additional disabilities (ages 4–24 years; not included in this study). Parents and students can access the app online at 4to24.org or download it from the Google Play or iOS App stores. The app is entirely free to use; it does not require a subscription and does not contain advertisements or in-app purchases.

Although the *4to24* app cannot replace individualized instruction, it can complement that instruction by delivering accessible, user-friendly information directly to students and parents with links to resources and ideas for activities students can complete at home and in the community. In addition to encouraging collaboration with service providers and reinforcing concepts and skills taught during lessons, *4to24* can promote learning during summer breaks or unplanned disruptions to services (e.g., severe weather, pandemics). Professionals who serve people with visual impairments can access the app content through a free online portal (nrtc.catalog.instructure.com/courses/4to24-app). This portal allows service providers to review the app modules that students and parents may receive across all ages and topic areas, which can assist with continuity between school-based instruction and the app.

References

Allman, C. B., & Lewis, S. (Eds.). (2014). *ECC essentials: Teaching the expanded core curriculum to students with visual impairments*. AFB Press.

Antonelli, K., Cmar, J. L., & Steverson, A. (2021). Development of 4to24, a transition application for parents of students with visual impairments. *Journal of Visual Impairment & Blindness*, *115*(6), 493–505. https://doi.org/10.1177/0145482X211059190

Antonelli, K., Steverson, A., & Cmar, J. L. (2023). Usability of 4to24: A transition application for parents of students with visual impairments. *Journal of Visual Impairment & Blindness*, *117*(1), 19–29. https://doi.org/10.1177/0145482X221150239

Burghardt, J., Haimson, J., Liu, A. Y., Lipscomb, S., Potter, F., Waits, T., & Wang, S. (2017). *National Longitudinal Transition Study 2012 design documentation (NCEE 2017–4021)*. U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance.

Cmar, J. L. (2015). Orientation and mobility skills and outcome expectations as predictors of employment for young adults with visual impairments. *Journal of Visual Impairment & Blindness*, *109*(2), 95–106. https://doi.org/10.1177/0145482x1510900205

Cmar, J. L., & McDonnall, M. C. (2019). Effectiveness of a job search training program for youth with visual impairments. *Career Development and Transition for Exceptional Individuals*, *42*(4), 214–224. https://doi.org/10.1177/2165143418792238

Cmar, J. L., McDonnall, M. C., & Crudden, A. (2018). Transportation self-efficacy and employment among individuals with visual impairments. *Journal of Vocational Rehabilitation*, *48*(2), 257–268. https://doi.org/10.3233/JVR-180925

Cmar, J. L., McDonnall, M. C., & Markoski, K. M. (2018). In-school predictors of postschool employment for youth who are deaf-blind. *Career Development and Transition for Exceptional Individuals*, *41*(4), 223–233. https://doi.org/10.1177/2165143417736057

Crudden, A. (2012). Transition to employment for students with visual impairments: Components for success. *Journal of Visual Impairment & Blindness*, *106*(7), 389–399. https://doi.org/10.1177/0145482x1210600702

Doren, B., Gau, J. M., & Lindstrom, L. E. (2012). The relationship between parent expectations and postschool outcomes of adolescents with disabilities. *Exceptional Children*, *79*(1), 7–23.

Farrand, K. M., Shaheen, N., Wild, T., Averil, J., & Fast, D. (2018). Improving student self-efficacy: The role of inclusive and innovative out of school programming for students with blindness and visual impairments. *Journal of Blindness Innovation and Research*, *8*(2). https://doi.org/10.5241/8-151

Fast, D., & Kaiser, J. T. (2022). Orientation and mobility for children with visual impairments during COVID-19: Responses from O&M professionals to a disruption of traditional services. *British Journal of Visual Impairment*. Advance online publication. https://doi.org/10.1177/02646196221104898

Hatlen, P. (1996). The core curriculum for blind and visually impaired students, including those with additional disabilities. *RE:View*, *28*(1), 25–32.

Hirano, K. A., & Rowe, D. A. (2016). A conceptual model for parent involvement in secondary special education. *Journal of Disability Policy Studies*, *27*(1), 43–53. https://doi.org/10.1177/1044207315583901

Individuals with Disabilities Education Act, 20 U.S.C. § 1401 (2004).

Johnson, P. M., Newman, L. A., Cawthon, S. W., & Javitz, H. (2022). Parent expectations, deaf youth expectations, and transition goals as predictors of postsecondary education enrollment. *Career Development and Transition for Exceptional Individuals*, *45*(3), 131–142. https://doi.org/10.1177/21651434211067425

Kirby, A. V., Dell'Armo, K., & Persch, A. C. (2019). Differences in youth and parent postsecondary expectations for youth with disabilities. *Journal of Vocational Rehabilitation*, *51*(1), 77–86. https://doi.org/10.3233/JVR-191027

Landmark, L. J., Stockall, N., Cole, C. V., Mitchell, V. J., Durán, J. B., & Gushanas, C. M. (2022). Using vertical transitions from early childhood to postsecondary environments to improve transition outcomes. *Teaching Exceptional Children*, *55*(2), 102–112. https://doi.org/10.1177/00400599211073141

Lindstrom, L., Doren, B., Metheny, J., Johnson, P., & Zane, C. (2007). Transition to employment: Role of the family in career development. *Exceptional Children*, *73*(3), 348–366. https://doi.org/10.1177/001440290707300305

Lipscomb, S., Haimson, J., Liu, A. Y., Burghardt, J., Johnson, D. R., & Thurlow, M. L. (2017). *Preparing for life after high school: The characteristics and experiences of youth in special education. Findings from the National Longitudinal Transition Study 2012. Volume 2: Comparisons across disability groups: Full report*. U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance. https://ies.ed.gov/ncee/pubs/20184007/

Lund, E. M., & Cmar, J. L. (2019a). A systematic review of factors related to employment outcomes in adults with visual impairments. *Journal of Visual Impairment & Blindness*, *113*(6), 493–517. https://doi.org/10.1177/0145482X19885211

Lund, E. M., & Cmar, J. L. (2019b). Factors related to employment outcomes in vocational rehabilitation consumers with visual impairments: A systematic review. *Journal of Visual Impairment & Blindness*, *113*(6), 518–537. https://doi.org/10.1177/0145482X19885277

Lund, E. M., & Cmar, J. L. (2020). A systematic review of factors related to employment in transition-age youth with visual impairments. *Rehabilitation Psychology*, *65*(2), 122–136. https://doi.org/10.1037/rep0000303

McDonnall, M. C. (2010). The employment and post-secondary educational status of transition-age youths with visual impairments. *Journal of Visual Impairment & Blindness*, *104*(5), 298–303.

Miller, T., Garland, M., & Gerdeman, D. (2020). *College enrollment and completion among Texas high school graduates with a disability (REL 2021-043)*. National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences. https://ies.ed.gov/ncee/edlabs/regions/southwest/pdf/REL_2021043.pdf

Nagle, K. M. (2001). Transition to employment and community life for youths with visual impairments: Current status and future directions. *Journal of Visual Impairment & Blindness*, *95*(12), 725–738. https://doi.org/10.1177/0145482X0109501203

Reed, M., & Curtis, K. (2012). Experiences of students with visual impairments in Canadian higher education. *Journal of Visual Impairment & Blindness*, *106*(7), 414–425. https://doi.org/10.1177/0145482x1210600704

Richardson, J. T. E., & Roy, A. W. N. (2002). The representation and attainment of students with a visual impairment in higher education. *British Journal of Visual Impairment*, *20*(1), 37–48. https://doi.org/10.1177/026461960202000107

Rosenblum, L. P., Herzberg, T. S., Wild, T., Botsford, K. D., Fast, D., Kaiser, J. T., Cook, L. K., Hicks, M. A. C., DeGrant, J. N., & McBride, C. R. (2020). *Access and engagement: Examining the impact of COVID-19 on students birth-21 with visual impairments, their families, and professionals in the United States and Canada*. American Foundation for the Blind. https://www.afb.org/research-and-initiatives/education/covid19-education-research/access-engagement-study

Sanford, C., Newman, L., Wagner, M., Cameto, R., Knokey, A.-M., & Shaver, D. (2011). *The post-high school outcomes of young adults with disabilities up to 6 years after high school: Key findings from the National Longitudinal Transition Study-2 (NLTS2) (NCSER 2011-3004)*. SRI International.

Sapp, W., & Hatlen, P. (2010). The expanded core curriculum: Where we have been, where we are going, and how we can get there. *Journal of Visual Impairment & Blindness*, *104*(6), 338–348. https://doi.org/10.1177/0145482X1010400604

Schuck, L., Wall-Emerson, R., Kim, D. S., & Nelson, N. (2019). Predictors associated with college attendance and persistence among students with visual impairments. *Journal of Postsecondary Education and Disability*, *32*(4), 339–358. http://www.ahead.org/publications/jped

SRI International. (2000). *National Longitudinal Transition Study-2 (NLTS2): Study design, timeline, and data collection plan*. SRI International. https://nlts2.sri.com/studymeth/#data_collection

Steverson, A., Cmar, J. L., & Antonelli, K. (2022). The experiences of parents of and students with visual impairments with 4to24, a transition application. *Journal of Visual Impairment & Blindness*, *116*(5), 644–657. https://doi.org/10.1177/0145482X221132849

Wehman, P., Sima, A. P., Ketchum, J., West, M. D., Chan, F., & Luecking, R. (2015). Predictors of successful transition from school to employment for youth with disabilities. *Journal of Occupational Rehabilitation*, *25*(2), 323–334. https://doi.org/10.1007/s10926-014-9541-6

Wild, T., Herzberg, T. S., & Hicks, M. (2022). The changing role of teachers of students with visual impairments in North America during the initial response to the COVID-19 pandemic. *British Journal of Visual Impairment*. Advance online publication. https://doi.org/10.1177/02646196221109079

Wolffe, K. E. (2007). Transition: Planning for the world beyond school. In S. LaVenture (Ed.), *A parents' guide to special education for children with visual impairments* (pp. 245–290). AFB Press.

Wolffe, K. E., & Kelly, S. M. (2011). Instruction in areas of the expanded core curriculum linked to transition outcomes for students with visual impairments. *Journal of Visual Impairment & Blindness*, *105*(6), 340–349. https://doi.org/10.1177/0145482x1110500605

Workforce Innovation and Opportunity Act of 2014, 29 U.S.C. § 3101 (2014).

Zabelski, M. (2007). Start at the beginning: The importance of early intervention. In S. LaVenture (Ed.), *A parents' guide to special education for children with visual impairments* (pp. 37–58). AFB Press.

Table 1
Demographics

Variable	Parents' children (*n* = 24)		Student participants (*n* = 19)	
	n	%	*n*	%
Gender				
Female	10	41.7	11	57.9
Male	14	58.3	8	42.1
School level				
Preschool/Elementary	12	50.0	0	0.0
Middle	4	16.7	0	0.0
High	6	25.0	6	31.6
College	1	4.2	11	57.9
Not currently enrolled in school	1	4.2	2	10.5

Table 2

Comparison of Confidence Ratings Before and After App Use

Variable	Pre			Post			*t*	*p*
	n	*M*	*SD*	*n*	*M*	*SD*		
Travel in the community	35	5.74	2.93	35	6.77	2.78	-2.48	.02
Use public transit	31	4.35	3.82	31	5.74	3.28	-2.71	.01
Use technology	42	8.31	2.07	43	8.51	1.96	-0.97	.34
Complete academic work	43	7.86	2.71	43	8.28	2.33	-1.26	.22
Have good social relationships	43	7.26	2.69	43	7.44	2.27	-0.67	.51
Work in a paid job	32	6.97	3.00	30	7.90	2.51	-1.36	.19
Take care of self	43	7.84	2.58	43	8.35	1.99	-2.23	.03

Note. Parents who indicated their child was too young for a task were excluded from the analyses for that item.

Table 3

Average Confidence Ratings for Parents and Students

Variable	Parents (*n* = 24)				Students (*n* = 19)			
	Pre		Post		Pre		Post	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Travel in the community[a]	4.81	2.76	5.81	2.51	6.53	2.91	7.58	2.80
Use public transit[b]	2.50	2.94	3.67	2.35	5.53	3.91	7.05	3.14
Use technology[c]	7.83	2.08	8.00	2.00	8.89	1.94	9.16	1.74
Complete academic work	7.79	2.81	7.58	2.84	7.95	2.66	9.16	0.96
Have good social relationships	6.54	2.62	6.88	2.29	8.16	2.57	8.16	2.09
Work in a paid job[d]	6.38	3.12	6.36	3.14	7.37	2.93	8.79	1.55
Take care of self	7.00	2.62	7.58	2.15	8.89	2.16	9.32	1.25

[a]Excludes 8 parents who said their child was too young at pre and post.

[b]Excludes 12 parents who said their child was too young at pre and post.

[c]Excludes 1 parent who said their child was too young at pre.

[d]Excludes 11 and 13 parents who said their child was too young at pre and post, respectively.

Table 4
Confidence by App Use

Variable	More than once a month (*n* = 18)						Once a month or less (*n* = 25)					
	Pre			Post			Pre			Post		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Travel in the community	15	5.67	3.35	15	7.73	2.66	20	5.80	2.67	20	6.05	2.70
Use public transit	14	4.93	3.93	13	7.08	2.40	17	3.88	3.77	18	4.78	3.54
Use technology	18	7.67	2.40	18	8.72	1.81	24	8.79	1.67	25	8.36	2.08
Complete academic work	18	7.50	3.00	18	8.50	2.28	25	8.12	2.52	25	8.12	2.40
Have good social relationships	18	8.33	2.74	18	8.50	1.92	25	6.48	2.42	25	6.68	2.23
Work in a paid job	14	6.71	3.56	13	8.46	2.22	18	7.17	2.57	17	7.47	2.70
Take care of self	18	8.39	2.59	18	8.78	2.26	25	7.44	2.55	25	8.04	1.74

Table 5

Comparison of Expectations Before and After App Use (N = 43)

Variable	Pre		Post		*p*
	n	%	*n*	%	
Obtain postsecondary education	34	79.1	36	83.7	.63
Obtain a 4-year degree	28	65.1	25	58.1	.51
Earn enough to support themselves[a]	37	86.1	39	90.7	.63
Work in a career of their choice[a]	41	95.4	40	93.0	1.00
Live on their own[a]	39	90.7	40	93.0	1.00

[a]Values represent “definitely/probably will” responses.

Table 6
Parent and Student Expectations

Variable	Parents (*n* = 24)				Students (*n* = 19)			
	Pre		Post		Pre		Post	
	n	%	*n*	%	*n*	%	*n*	%
Obtain postsecondary education	21	87.5	22	91.7	13	68.4	14	73.7
Obtain a 4-year degree	17	70.8	15	62.5	11	57.9	10	52.6
Earn enough to support themselves[a]	20	83.3	21	87.5	17	89.5	18	94.7
Work in a career of their choice[a]	22	91.7	21	87.5	19	100	19	100
Live on their own[a]	21	87.5	21	87.5	18	94.7	19	100

[a]Values represent “definitely/probably will” responses.

Table 7
Expectations by App Use

Variable	More than once a month (*n* = 18)				Once a month or less (*n* = 25)			
	Pre		Post		Pre		Post	
	n	%	*n*	%	*n*	%	*n*	%
Obtain postsecondary education	12	66.7	14	77.8	22	88.0	22	88.0
Obtain a 4-year degree	8	44.4	10	55.6	20	80.0	15	60.0
Earn enough to support themselves[a]	16	88.9	17	94.4	21	84.0	22	88.0
Work in a career of their choice[a]	18	100	17	94.4	23	92.0	23	92.0
Live on their own[a]	17	94.4	17	94.4	22	88.0	23	92.0

[a]Values represent “definitely/probably will” responses.