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Post High School Transition Outcomes for Young Adults with Down Syndrome

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Abstract:	There is limited available research on the post high school outcomes of young adults with Down syndrome (DS). The purpose of this study, therefore, was to characterize employment, community-based living, and community engagement outcomes and their correlates among young adults with DS who recently transitioned out of high school. Caregivers (n = 100) of young adults with DS who exited high school within the past 5 years completed an online survey. Approximately half of the individuals with DS were working in some capacity; almost all were living with caregivers. Individuals with DS were engaging in a variety of community activities each week. Adaptive functioning was related to both employment and community engagement. Parent involvement in transition planning was also related to community engagement.

Abstract

There is limited available research on the post high school outcomes of young adults with Down syndrome (DS). The purpose of this study, therefore, was to characterize employment, community-based living, and community engagement outcomes and their correlates among young adults with DS who recently transitioned out of high school. Caregivers ($n = 100$) of young adults with DS who exited high school within the past 5 years completed an online survey. Approximately half of the individuals with DS were working in some capacity; almost all were living with caregivers. Individuals with DS were engaging in a variety of community activities each week. Adaptive functioning was related to both employment and community engagement. Parent involvement in transition planning was also related to community engagement.

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Post High School Transition Outcomes for Young Adults with Down Syndrome

The transition out of high school and into the “real world” is a unique time period for all individuals. This time typically coincides with the transition to becoming a legal adult in the U.S., and it is a time when one must make decisions regarding employment, community-based living, and community engagement. For individuals with disabilities, it also represents a transition from receiving entitlement-driven services in the educational system to eligibility-based services in the community (Hanley-Maxwell et al., 1995).

Transitioning out of high school is especially important for young adults with Down syndrome (DS) who have reported a strong desire for independence, especially in employment, residential arrangements, and community engagement (Scott et al., 2013; Sellinger et al., 2006). In fact, the Centers for Disease Control and Prevention and the National Down Syndrome Society released a joint report outlining a public health research agenda for DS (Rasmussen et al., 2008). This report identified the transition between school-based and community-based services and its effects on the well-being of young adults with DS as a top priority. Despite some evidence that young adults with DS face barriers when transitioning out of high school, there is little research regarding functional outcomes (i.e., employment, community-based living, and community engagement), especially in the first few years after these individuals leave high school (Channell & Loveall, 2018). Further, young adulthood represents a critical developmental period before the decline of neurocognitive and functional abilities, which begins early (i.e., before middle adulthood) for most individuals with DS (Zigman, 2013). Thus, it is important to understand functional outcomes in the formative years of young adulthood so that supports are in place before declines occur. The purpose of this study was to characterize post school outcomes (i.e., employment, community-based living, and community engagement) among young adults with DS who had recently transitioned out of high school and to identify correlates of these outcomes.

Functional Outcomes

Employment is considered a cornerstone of successful transition to adulthood (Thomson et al., 1995). However, the limited available research suggests high rates of unemployment for adults with DS in the U.S. In the largest study to date, Kumin and Schoenbrodt (2015) reported that across a sample of over 500 adults with DS (ages 18-61 years) living in the U.S., 30% were currently unemployed, and 23% were reported as having never been employed. Of those working, only 3% were employed full-time (i.e., more than 30 hours per week), thus preventing many employees with DS from earning benefits such as medical, dental, or vision care. Other studies have also reported similarly poor employment outcomes for individuals with DS (e.g., Baccichetti, 2007; Bertoli et al., 2011; Carr, 2008; Jobling & Cuskelly, 2002). What is unclear from these studies is whether employment outcomes are better or worse immediately after high school.

The living arrangements of adults with DS is also a large concern. Although sparse, prior research suggests that in the U.S. a majority of adults with DS live at home with family members (Esbensen et al., 2010; Stancliffe et al., 2012; Woodman et al., 2014), though this trend may be declining (Channell & Loveall, 2018). Most recently, Stancliffe et al. (2012) reported that in a sample of over 1,000 adults with DS (ages 18-82 years, $M = 42$ years), 43% were living with relatives. This was significantly higher for adults with DS versus adults with other intellectual disabilities. However, most research has examined community-based living outcomes among older adults with DS (e.g., Woodman et al., 2014; Esbensen et al., 2010) rather than among young adults who recently aged out of school services. The absence of such research is problematic because practice and policy suggest that individuals with disabilities, including DS, should at least plan for the transition out of the family home before a crisis occurs (e.g., an aging caregiver dies; Hodapp et al., 2016).

Community engagement—interacting with others and participating in leisure and recreational activities within one’s community—is another important component of adulthood. When individuals with intellectual and developmental disabilities lack such activities, they are significantly more likely to display emotional-behavioral and health problems (Taylor & Hodapp, 2012). However, only a small body of literature has examined community engagement outcomes for adults with DS in the U.S.

Esbensen et al. (2010) reported that for their sample of adults with DS ages 22 to 40+ years, 47% reported social contact with friends once a week or more but 30% reported having social contact less than yearly or never. In a study of leisure activities in middle-aged and older adults (30+ years) with DS in the U.S., Mihaila et al. (2017) reported that participants were most likely to engage in “passive” leisure activities, such as watching TV, on a weekly basis (97%), and least likely to participate in “physical” leisure activities, such as exercise (71%). Social activities were also ranked highly, with approximately 92% of the sample reportedly engaging in some social activity each week. With the bulk of this already small literature focused on middle-aged and older adults with DS, it is critical to identify community engagement activities as younger adults with DS age out of school services and their daily routines change.

Correlates of Functional Outcomes

For all individuals, outcomes—whether cognitive, physical, or social in nature—are predicted by the interaction of individual (e.g., in the case of DS, extra 21st chromosome material) and environmental factors (Fidler et al., 2011; Granic, 2005; Massand & Karmiloff-Smith, 2015; Masten & Cicchetti, 2010; Thelen & Smith, 2006). At the individual level, adaptive functioning abilities appear especially important to both employment (Foley et al., 2013; Tomaszewski et al., 2018) and community-based living outcomes (Woodman et al., 2014) for individuals with DS. Although research has not examined this relation, it is likely that adaptive functioning will also correlate with community engagement given

its importance for other outcomes. Age is another correlate of community-based living outcomes in DS; older individuals with stronger adaptive functioning skills are more likely to live semi- or fully-independently (Channell & Loveall, 2018; Woodman et al., 2014). However, age as a predictor is likely tied to aging parents; as parents become older, they must find alternative living arrangements for their adult children (Stancliffe et al., 2012; Woodman et al., 2014). Finally, in adults with other intellectual and developmental disabilities, maladaptive behaviors have also been linked to poorer outcomes relative to employment, daytime activities, and independence (e.g., Esbensen et al., 2010; Taylor & Hodapp, 2012). However, this relation is less clear for individuals with DS (e.g., Foley et al., 2013; cf. Esbensen et al., 2010).

At the environmental level, both parent involvement in a child's transition and the amount of social support for the parent as they assist their child can also impact post school outcomes. For example, parent involvement likely plays a large role in employment, as parents are often responsible for helping individuals with DS locate and secure employment (Sanderson et al., 2017). Similarly, family is also likely to help initiate activities relevant to social outings and community engagement (Mihaila et al., 2017; Seltzer et al., 2001), and adults with DS who live with family are more likely to have access to transportation for community engagement activities (Badia et al., 2011; Buttimer & Tierney, 2005). Family involvement has also been identified as an important predictor of successful adjustment to new community-based living arrangements (Heller et al., 2002; Woodman et al., 2014). Relatedly, individuals with DS (vs. other types of intellectual disabilities) often receive significantly more social support from extended family and friends (Sanderson et al., 2017). From the limited research, it also seems that greater social support, both for individuals with intellectual disabilities and their families, could help improve post school outcomes for individuals with disabilities (Reynolds et al., 2019).

Although the immediate post school outcomes of individuals with DS is a national priority in the DS research agenda (Rasmussen et al., 2008), there is a paucity of research about young adults with DS as they transition from school to adult services. The current study, therefore, sought to characterize the immediate post school outcomes of individuals with DS to improve our understanding of the effects of exiting the school system and to shed light on when interventions are needed to improve post school outcomes. Further, we sought to identify correlates of post school outcomes to identify which individuals with DS are most vulnerable to poor outcomes and to identify which, if any, correlates could be capitalized on in interventions to support transition. Thus, we examined two aims:

1. Characterize post high school transition outcomes relative to employment, community-based living, and community engagement for young adults with DS.
2. Examine potential individual (i.e., adaptive functioning, maladaptive behaviors, age) and family (i.e., parent involvement, parent perceived social support) factors associated with these outcomes.

Method

Recruitment

A link to the online survey was sent to organizations associated with DS across the U.S. (e.g., chapters of The Arc and parent/family support and social media groups) to share with their constituencies. Individuals were also recruited via word of mouth by the authors. After completing the survey, respondents could submit their email address to receive a \$20 gift card for their time and effort.

Respondents

To be eligible, respondents had to be the parent or primary caregiver to an individual with DS who had stopped attending high school in the last five years and currently live in the U.S. All respondents who answered “yes” to the inclusion criteria were further screened to ensure the validity of

their data and to prevent duplicate responses. Any respondents who did not meet these criteria were excluded from data analysis.

After data screening, a total of 100 respondents were included in data analysis. Respondents were parents and other primary caregivers (91% mothers; 6% fathers; 1% other relatives; 2% non-relatives; 34-69 years, $M = 55.81$, $SD = 5.55$) of young adults with DS from 24 states across the U.S. who had exited high school within the past 5 years. See Table 1 for descriptive data.

<Insert Table 1>

Procedures

An online survey, designed and implemented through Qualtrics, was used to examine post high school outcomes in young adults with DS. The survey was developed based on a review of the literature on adults with DS (Channell & Loveall, 2018) and pilot responses from three sets of parents of adults with intellectual disabilities. The survey was completed anonymously; respondents took an average of 45 minutes to complete the survey. At the beginning of the survey, respondents reviewed the study purpose and were asked questions relating to the inclusion criteria. After reading the study information and answering eligibility questions, they could consent to participate.

Measures

The first part of the survey asked demographic questions related to the respondent and their adult son/daughter with DS. This was followed by a section that asked education-related questions about the individual with DS (e.g., when the individual with DS stopped attending high school).

Outcome Variables

The next three sections asked questions targeting the study outcomes: employment/vocational status, community-based living/residential setting, and community engagement.

Employment/vocational status. Respondents reported descriptive information regarding current employment and volunteer activities of the individual with DS (i.e., if currently employed; hours working/volunteering per week). Questions were modeled from the Vocational Index (Taylor & Seltzer, 2012), which includes the frequency and level of independence in vocational settings. The individual with DS was then scored on their employment/vocational status on a scale of 1-9, with 9 representing “most independent” (e.g., employed in the community without supports for greater than 10 hours per week) and 1 representing “least independent” (e.g., no vocational activities/educational activities). The individual with DS was scored based on the most independent activity reported in the scale.

Community-based living/residential setting. Respondents reported descriptive information regarding current living arrangements for the individual with DS (e.g., lives alone, lives with parent(s)/primary caregiver, or lives in group house, condo, duplex, or apartment, etc.). They also reported the level of non-financial support (i.e., minimal, moderate, or significant) and primary source of funds associated with the living arrangements for the individual with DS. Questions were modeled from the National Longitudinal Transition Study–2 (NLTS2; SRI International, 2009).

Community engagement. Respondents completed the Community Integration Scale (CIS; Heller et al., 1999) to report on community engagement for the individual with DS. The CIS rates how frequently an individual engages in 13 activities in the community (e.g., visits with friends outside residence) on a scale of 1-4 (1 = none, 2 = 1-3 times per month, 3 = weekly, or 4 = 2+ times weekly). Responses to individual items were reported, and a mean score was calculated for each participant for data analysis. For this sample, Cronbach’s alpha equaled .71.

Correlates

The survey also included questions pertaining to individual and family level correlates of the outcomes.

Individual factor: Adaptive behavior. At the individual level, we measured adaptive functioning via a mean score on the Waisman Activities of Daily Living Scale (W-ADL; Maenner et al., 2013). Respondents rated the level of independence (0 = does not do at all; 2 = independent or does on own) for the individual with DS on a list of 17 items targeting daily living skills. Higher scores indicate greater adaptive functioning abilities. For this sample, Cronbach's alpha equaled .91.

Individual factor: Maladaptive behavior. Respondents reported on internalizing, externalizing, and asocial maladaptive behaviors of the individual with DS via the Scales of Independent Behavior-Revised (SIB-R; Bruininks et al., 1996). The General Maladaptive Index (GMI) was used in data analysis. Scores on the GMI range from -70 to +10, with higher scores indicating fewer and less severe maladaptive behaviors; scores of -10 and above are considered within normal limits. For this sample, Cronbach's alpha equaled .91.

Individual factor: Age. Age of the individual with DS was considered as an individual level factor.

Family factor: Parent involvement in transition planning. We measured the respondent's involvement in transition planning via a mean score on a survey of parental level of involvement in transition (modeled from Geenen et al., 2001). Respondents rated their own planning and involvement (1 = not at all; 5 = a lot) by 10 items targeting the transition out of high school; higher scores indicate greater involvement. For this sample, Cronbach's alpha equaled .87.

Family factor: Parent perceived social support. We measured parents' perceptions of the social support they receive from friends and family via the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988). Respondents reported their agreement (1 = very strongly disagree; 7 = very strongly agree) on 12 items targeting their perceived social support (e.g., "My family is willing to help me make decisions", "I can count on my friends when things go wrong", "I can talk about my

problems with my family”); higher scores indicate higher levels of perceived social support. Mean scores were used in data analysis. For this sample, Cronbach’s alpha equaled .98.

Analytic Plan

For Aim 1, to characterize post high school transition outcomes in young adults with DS, descriptive statistics were used to report outcomes relative to employment, community-based living, and community engagement. For Aim 2, regression analyses were used to examine possible individual (i.e., adaptive functioning skills, maladaptive behaviors, age) and family (i.e., parent involvement in transitioning and parent perceived social support) factors associated with outcomes. **Because employment data from the Vocational Index were ordinal**, binary logistic regression was used to examine employment outcomes (employed in the community with or without supports vs. sheltered vocational workshop, volunteering, or no vocational activities) **(see Taylor et al., 2015 for a similar approach)**. Multiple linear regression was used to examine community engagement via the CIS. Because almost all individuals with DS were living with family, we did not examine correlates of this outcome.

There were two statistical outliers on the SIB-R, three statistical outliers on the scale assessing parent involvement in transition planning, and one statistical outlier on the W-ADL. Analyses were conducted both with and without these participants, and the pattern of results did not change. We therefore included these participants in data analysis and the reported results. Assumption testing revealed no other serious violations of logistic or linear regression, including multicollinearity among individual and family level factors.

Missing Data

During the initial screening process, three participants were excluded from data analysis for incomplete surveys. One of these participants answered only background questions and no questions relating to study outcomes (employment, residential setting, community engagement) or correlates of

those outcomes (adaptive behavior, maladaptive behavior, parent involvement, parental perceived social support). Two participants only answered questions relevant to two outcomes and then discontinued the survey.

Across the five scales included (i.e., CIS, W-ADL, SIB-R, MSPSS, and parent involvement in transitioning, $n = 68$ items total), we were missing data for eight of the 100 participants included in data analysis. Of those eight participants, four were missing one item (1.47%), one was missing two items (2.94%), one was missing four items (5.88%), one was missing seven items (10.29%), and one was missing 14 items (20.58%). The missing data were spread across 23 items from the CIS, W-ADL, MSPSS, and parent involvement in transition survey. Across the missing data, no individual item from any measure was missing more than two data points (2.00%). We used the predictive mean matching method of multiple imputation to address the missing data (Little, 1988; Little & Rubin, 2002; Rubin, 1986). This method uses linear regression models with complete datasets to yield predicted values for the missing data. We used R (R Core Team, 2019) and the mice package (Van Buuren & Groothuis-Oudshoorn, 2011) to calculate the imputed values. The one participant for whom 14 data points were missing did not complete the MSPSS ($n = 12$ items); no data were imputed for this participant on this scale. In addition, two participants were excluded from the Vocational Index because they selected “other” but did not provide enough details to be scored, and age was unknown for four participants.

Preliminary Analyses

Descriptive statistics and correlations for key variables are in Table 2. Scores on the Vocational Index were significantly correlated with adaptive functioning skills. Scores on the CIS were significantly correlated with adaptive functioning skills, maladaptive behaviors, and parent involvement in transitioning.

<Insert Table 2>

Results

Employment/Vocational Status

Notably, 52% ($n = 51$) of the individuals with DS were currently working in some capacity. However, only 36% ($n = 35$) were working in the community with or without supports, while 16% ($n = 16$) were working in sheltered vocational settings. Of those employed in the community, approximately half were working 10 hours a week or less. Only one respondent reported that their adult son/daughter with DS was currently enrolled in a postsecondary, degree-seeking educational program. Several individuals with DS (31%, $n = 30$) were not working but were volunteering in their communities. Only 16% ($n = 16$) reportedly were not involved in any vocational or postsecondary educational activities. See Table 3 for Vocational Index scores.

<Insert Table 3>

Community-Based Living Arrangements

For community-based living, a majority of respondents reported that the individual with DS was still living at home with caregivers (93%, $n = 93$), though a small percentage were living with a roommate(s) (3%, $n = 3$) or a group (1%, $n = 1$) in a house, condo, duplex, or apartment. The remaining three individuals with DS were reported to be living in a dorm room on campus by themselves, living in an apartment basement connected to the respondent's home, and living in a Community Integrated Living Arrangement (CILA) group home. Most individuals with DS were reported to only need moderate (63%, $n = 62$) or minimal (29%, $n = 29$) non-financial support with daily living activities; 8% ($n = 8$) needed significant assistance, and one individual did not have a response. Funding for the individual's residence was primarily provided by family/friends/self, (75%, $n = 74$); others were primarily funded by government organizations (23%, $n = 23$) or "other" (2%, $n = 2$). One participant did not respond.

Community Engagement

For community engagement, most individuals with DS were engaging in a variety of activities within the community almost weekly, as represented by an average score from the CIS of 2.44 ($SD = .45$). Means and standard deviations for individual items are in Table 4.

<Insert Table 4>

Correlates

Employment/Vocational Status

To examine factors associated with employment, binary logistic regression was used to examine the impact of both individual-level (i.e., adaptive functioning skills via the W-ADL; maladaptive behaviors via the SIB-R GMI; age of the individual with DS) and family-level (i.e., parent involvement in transitioning; perceived social support via the MSPSS) factors. Individuals with DS who were employed in the community with or without supports (i.e., with scores of 6-9 on the Vocational Index) were categorized as ‘employed’. Individuals with DS with scores from 1-4 on the Vocational Index were categorized as ‘unemployed’. No participants had a score of 5. The full model was significant, $\chi^2(5, N=93) = 25.28, p < .001$. The model explained between 23.8% (Cox and Snell R^2) and 32.4% (Nagelkerke R^2) of the variance in employment status and correctly classified 73.1% of cases. Only two of the independent variables made a unique statistically significant contribution to the model: adaptive functioning skills and age of the individual with DS. Stronger adaptive functioning skills and older individuals were more likely to be employed. Notably, adaptive functioning skills was the strongest correlate, with an odds ratio of 56.36. See Table 5.

<Insert Table 5>

Community Engagement

A multiple linear regression model was used to examine associations between individual- and family-level factors and community engagement. The full model was significant, $F(5, 89) = 7.77, p < .001$, explaining 30% of the variance in community engagement. Adaptive functioning skills again emerged as the strongest correlate, explaining 10% of unique variance. Parent involvement in transition was also statistically significant, explaining an additional 4% of unique variance. Stronger adaptive functioning skills and greater parent involvement in transitioning were related to greater community engagement. See Table 6.

<Insert Table 6>

Discussion

Our first aim was to characterize employment, community-based living, and community engagement outcomes for young adults with DS who exited high school in the past five years. Our second aim was to identify individual and family factors associated with these outcomes.

Functional Outcomes

Approximately half of the young adults with DS from the current study had reportedly found employment within five years of exiting high school; of those who were unemployed, the majority were volunteering in their communities. These results are consistent with previous research indicating that approximately half of adults with DS who are surveyed have found employment, but most are not working full-time (e.g., Kumin & Schoenbrodt, 2015). Our results indicate this pattern may be established in the first five years after exiting high school.

As for living arrangements, almost all respondents indicated that the individual with DS was still living at home with caregivers, despite only needing minimal (e.g., case management only or minimal family support) or moderate (e.g., assistance with transportation, food preparation, help with laundry and other household chores) support for daily living activities. Although previous research has also

documented high rates of adults with DS living with relatives (e.g., Stancliffe et al., 2012 reported 43%), the prevalence of living at home with family caregivers was even higher in our sample. This may be an artifact of having a young sample (vs. middle-aged or older adults with DS). However, waiting for an individual to move out of the family home until the individual is older and a crisis occurs (e.g., the parent dies) leaves individuals with disabilities vulnerable to inappropriate residential settings (Heller & Caldwell, 2006). Thus, our finding reinforces the need to examine community living arrangements outside of the caregiver home sooner for individuals with DS (Hodapp et al., 2016).

Our final outcome was community engagement. Respondents reported almost weekly engagement in several activities for the individual with DS. Among those, the most common were using social networks to communicate, going to restaurants/bars, visiting with friends and relatives outside of one's residence, and shopping. Our results are consistent with Mihaila et al.'s (2017) finding that almost 92% of adults with DS, 30-53 years old, participate in some community engagement/social leisure activity each week and extend this pattern of results to young adults with DS. In combination with the finding about minimal and/or underemployment in our sample, our study extends the literature suggesting that most young adults with DS are not "doing nothing" (Taylor & Hodapp, 2012) but rather their daytime activities may vary, ranging from some employment, volunteering in the community, and community engagement.

Individual and Family Correlates

We did not examine correlates of living outcomes because virtually all individuals with DS were still living at home. However, at the individual level, adaptive functioning skills emerged as a significant correlate of both employment/vocational activities and community engagement. Individuals with DS with stronger adaptive functioning skills were working more independently and were more actively engaged in their communities. This finding is consistent with previous research tying adaptive

functioning to employment outcomes (Foley et al., 2013; Tomaszewski et al., 2018) and is initial evidence that these skills also relate to community engagement. Notably, the age of the individuals with DS was also linked to employment outcomes, with older individuals working more independently. Age, however, could be representative of a number of factors. For example, age is likely associated with the number of years the individual with DS had been out of high school and possibly the opportunity to complete postsecondary vocational training. As a result, it could be that greater time to find employment and opportunities for vocational training could explain the greater likelihood of employment among older young adults with DS. Future research is needed to explain the relation between age and employment outcomes.

Interestingly, although maladaptive behaviors were marginally correlated with employment and significantly correlated with community engagement, they did not emerge as a significant unique correlate of either outcome. Previous research has linked emotional-behavioral health to leisure and recreational activities in individuals with intellectual disabilities (Taylor & Hodapp, 2012), but this has not always been replicated in DS (e.g. Esbensen et al., 2010). It is possible that this finding is reflective of lower rates of maladaptive behaviors in DS relative to other adults with intellectual disability (Dykens & Kasari, 1997; Esbensen et al., 2010). **Notably, and consistent with this hypothesis, our sample had normal rates of maladaptive behaviors, as indicated by the group's mean score falling within the normal range on the SIB-R.**

For community engagement, the only significant family level factor was parent involvement in transitioning. Respondents who reported themselves as being more active in transition planning (e.g., talking with the individual with DS about his/her life after high school, finding out about adult services, and helping the individual with DS find recreation, leisure, and social opportunities), also reported their adult children as being more regularly engaged in community-based activities. This finding fits with

prior literature reporting that families provide high amounts of support in recreation for individuals with DS (Sanderson et al., 2017). Surprisingly, parent involvement in transition planning was not correlated with employment outcomes. This finding is in contrast to a prior study wherein parent involvement helped secure employment for adults with DS (Sanderson et al., 2017). Notably, our study examined parent involvement in school-based transition planning whereas Sanderson and colleagues examined family involvement in the context of seeking natural supports (i.e., informal, unpaid supports, often provided by friends or family) for adults with disabilities. Thus, the context for family involvement (e.g., school-based or natural supports in adulthood) may matter in relation to employment outcomes.

Specifically, it may be that to improve employment options, parent involvement is more critical in accessing adult services rather than school-based transition services (Taylor et al., 2017). Whereas school-based transition services focus on developing pre-employment skills (e.g., job exploration, work-based learning experiences), adult services focus on joining the workforce. Parent involvement in the latter may more directly impact employment outcomes.

Limitations and Future Directions

There are several limitations that should be noted and used to guide future research. First, the data were self-reported by parents/guardians which could be impacted by social desirability responding and inaccurate or imprecise memories. Similarly, we were not able to directly assess individuals with DS and are therefore unable to report their perspectives of post high school transition or provide behavioral data on their abilities, such as intellectual functioning, to assess how cognitive abilities impact these outcomes. Another important consideration is representativeness of our sample to the larger population of individuals with DS. It is possible that respondents who chose to participate did so because they were especially involved or interested in transitioning, because their adult child had achieved high levels of success in transitioning, or conversely, frustration that their adult child had not

achieved their ideal level of success in transitioning. It is also possible that those who responded had more resources to support the transition for the individual with DS than the general population (e.g., two-thirds of our sample held at least a bachelor's degree). Lastly, these correlational data do not capture causality. Although adaptive functioning appears important to employment outcomes, for example, it is also possible that employment promotes adaptive functioning skills in individuals with DS.

More work remains to fully capture post high school transition outcomes for individuals with DS. Future research should include longitudinal data and data sources beyond parent report. Regarding the former, longitudinal data would be helpful to discern not only how employment, community-based living, and community engagement change over time but also how correlates change over time (Hodapp et al., 2016). With respect to data sources, behavioral assessments, including direct tests of cognition, social-emotional functioning, and language/literacy, would improve our understanding of post high school functional outcomes for young adults with DS. **Future research should also examine how regional variation, including urbanicity, impacts functional outcomes.**

Finally, and perhaps most importantly, more work is needed to identify the post high school goals that individuals with DS and their families have, if they are satisfied with their outcomes, and how to better support them in achieving any unmet goals. Scales, such as the measures used in this study, may not reflect the person-environment fit with respect to post school outcomes (Henninger & Taylor, 2013). For example, Blacher and colleagues (2010) found that parents of transition-aged youth with DS (vs. autism, cerebral palsy, and learning disabilities) were significantly more likely to want their son/daughter to have community employment. However, parent expectations for the number of hours their son/daughter may work and other outcomes (e.g., community engagement) are unknown. Even lesser known are the wishes of the individuals with DS themselves. Especially given the focus on

person-centered planning in transition planning, it is critical that future research includes the perspectives of youth with DS and their families.

Conclusions

Adult services are a limited resource in the U.S., and many adults with intellectual and developmental disabilities and their families are not receiving the services and supports they need (e.g., Anderson et al., 2011). Our results suggest that although young adults with DS are finding employment/vocational opportunities and are engaging in a variety of community-based leisure activities after high school, their opportunities are still limited. Adaptive functioning and age emerged as significant contributors to employment outcomes, and adaptive functioning and parental involvement in transition planning were significant contributors to community engagement. Of these correlates, adaptive functioning emerged as the strongest for young adults with DS. Therefore, these skills are particularly important targets for intervention and instruction across the educational years, during transition planning, and in adulthood. Empowering parents to play an active role in transition planning may also promote better outcomes as their young adult children with DS transition out of high school.

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Table 1*Participant Demographics*

	%
Parent Respondent Demographics	
Race	
White	93%
Black or African American	2%
Asian	2%
More than one race	2%
Preferred not to answer	1%
Ethnicity	
Not Hispanic or Latino	95%
Hispanic Latino	2%
Preferred not to answer	3%
Highest level of education	
High school diploma or GED	7%
Completed some college or technical school	20%
Associates/technical college degree	8%
Bachelor's degree	31%
Graduate/professional degree	34%
Youth with DS Participant Demographics	
Race	
White	92%
Black or African American	3%
More than one race	3%
Preferred not to answer	2%
Ethnicity	
Not Hispanic or Latino	96%
Hispanic Latino	1%
Preferred not to answer	3%
Sex	
Male	54%
Time Since Exiting High School	
Less than 6 months	18%
6-11 months	11%
1-2 years	26%
3-4 years	22%
4-5 years	23%

Table 2*Descriptive Statistics and Correlations among Key Variables*

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	Range	1	2	3	4	5	6	7
1. Vocational Index	98	4.19 ^a	2.82	1-9	--						
2. Community Engagement	100	2.44	.45	1.54-3.77	.35**	--					
3. Adaptive functioning	100	1.35	.35	.29-1.88	.44**	.50**	--				
4. Maladaptive behavior	100	-4.91	7.48	-44-0	.17 [^]	.23*	.42**	--			
5. Age	96	22.52	2.06	18.76-26.92	.16	-.08	-.02	-.25*	--		
6. Parent Involvement	100	3.85	.90	1-5	.14	.38**	.43**	.12	.10	--	
7. Perceived Social Support	99	5.01	1.83	1-7	.03	-.09	-.02	-.05	-.02	.09	--

Note. Spearman's Rank Order correlations reported for Vocational Index; Pearson *r* reported for all other correlations.

^a Median = 4.00.

[^] $p < .10$. * $p < .05$. ** $p < .001$.

Table 3*Number of participants for each score on the Vocational Index*

Score	Description	# of Participants (<i>n</i> = 98)
9 (Most independent)	Employed in the community without supports, greater than 10 hr/week	9
	Postsecondary, degree-seeking educational program, greater than 10 hr/week	1
8	Employed in the community without supports, 10 hr/week or less	9
	Postsecondary, degree-seeking educational program, 10 hr/week or less	0
7	Employed in the community with supports greater than 10 hr/week	9
6	Employed in the community with supports 10 hr/week or less	8
5 ^a	Sheltered vocational setting & supported community employment, greater than 10 hr/week	--
4	Sheltered vocational setting (workshop or day activity center) & volunteering in the community, greater than 10 hr/week	14
3	Sheltered vocational setting & volunteering in the community, 10 hr/week or less	2
2 ^b	Volunteering	30
1 (Least independent)	No vocational/educational activities	16

Note. Participants were allowed to select more than one activity but were scored according to their most independent activity.

^a Because we scored based on the most independent activity, a score of 5 was not possible.

^b While not included in the original survey, if the respondent indicated that the individual with DS was participating in transition services offered through a school district, they received a score of “2”. This applied to two participants.

Table 4*Community Integration Scale*

Activity	Mean	SD
Do other activities outside the residence	2.93	.98
Use social networks for electronic media to communicate (e.g. text, email, Facebook)	2.81	1.29
Go to restaurants/bars	2.78	.85
Visit with friends outside his/her residence	2.66	1.04
Go shopping	2.66	.77
Visit with relatives inside his/her residence	2.62	.97
Go to the park, YMCA, or health club	2.56	1.10
Go to movies, sports events, concerts, etc.	2.52	.72
Do volunteer work	2.41	1.15
Visit with relatives outside his/her residence	2.40	.83
Go to church/synagogue/mosque etc.	2.21	1.03
Visit with friends in his/her residence	1.83	.94
Participate in a community self-advocacy group	1.35	.64

Note. $n = 100$.

Table 5*Logistic Regression Predicting Employment*

	B	S.E.	Wald	df	p	Odds Ratio	95.0% C.I. for	
							Odds Ratio	
							<i>Lower</i>	<i>Upper</i>
Adaptive Functioning	4.03	1.15	12.41	1	<.001	56.36	5.98	531.20
Age	.33	.14	5.61	1	.02	1.39	1.06	1.84
Parent Involvement	-.34	.32	1.18	1	.28	.71	.38	1.32
Maladaptive Behavior	.03	.05	.49	1	.49	1.04	.94	1.14
Perceived Social Support	-.002	.14	.000	1	.99	1.00	.76	1.31
Constant	-12.26	3.94	9.68	1	.002	.00		

Note. n = 93.

Table 6*Multiple Linear Regression Predicting Community Engagement*

	<i>F</i>	<i>df</i>	R^2	Beta	<i>t</i>	<i>p</i>
Overall Model	7.77	5, 89	.30			<.001
Adaptive Functioning				.39	3.61	.001
Parent Involvement				.23	2.34	.02
Parent Perceived Social Support				-.10	-1.16	.25
Age				-.10	-1.05	.30
Maladaptive Behavior				.01	.11	.91

Note. $n = 94$.