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Indicators of Postsecondary Employment and Education for Youth With Disabilities in Relation to GPA and General Education

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Abstract

This study examined the relations among research-identified non-academic indicators of post-school education and employment measured by the Transition Assessment and Goal Generator (TAGG), student grade point average (GPA), and percentage of time students with disabilities received instruction in the general education classroom. Participants included 1,219 individuals from 49 school districts, across nine states. Analysis of Pearson product–moment correlation coefficients indicated weak to no relations among variables with the exception of persistence and core GPA. Neither student GPA nor time in the general education setting accounted for meaningful variance in TAGG scores, suggesting the TAGG measures behaviors different from GPA and educational placement. Only scores provided by educators yielded a moderate correlation between core GPA and the construct of persistence. Implications for practice and future research needed are discussed.

Keywords

college and career, transition assessment, disabilities, non-academic, GPA, general education

American high schools have undergone numerous changes and reforms, morphing from a college preparatory program for a select few students to adding workforce preparation skills, and current reform has shifted the educational focus back to academics with added emphasis on testing and accountability. The goal of current reform is to ensure all students are college and career ready; however, the strong academic focus seems to concentrate on college preparation with no evidence of improving student outcomes (Balfanz, 2009). As a response to current reform efforts, more students with disabilities are being educated in the general education setting (Goodman, Hazelkorn, Bucholz, Duffy, & Kitta, 2011).

Students with disabilities continue to lag behind their peers in the areas of postsecondary education and employment and are still less likely to enroll in postsecondary education than their same-age non-disabled peers. Of those who do enroll, 38% complete their prospective program versus 51% of the general population (Sanford et al., 2011). Individuals with disabilities also continue to have a lower employment rate than the general population (The National Collaborative on Workforce & Disability for Youth and Workforce Strategy Center, 2009) with 36% of non-institutionalized individuals with disabilities, aged 21 to 64 years, employed in the United States (Erickson, Lee, & von Schrader, 2014).

The educational and political shift from a life-skills curriculum to more rigorous academic content standards to prepare all students for college and career should, theoretically, improve the outcomes of all students (Browder, Spooner, Wakeman, Trela, & Baker, 2006). Increased focus on academic outcomes associated with preparing students to be college and career ready has resulted in more students with disabilities placed in the general education setting to gain necessary skills for the transition from high school settings into work or higher education (Balfanz, 2009). Baer, Daviso, Flexer, Queen, and Meindl (2011), Baer et al. (2003), and Mazzotti, Rowe, Cameto, Test, and Morningstar (2013) found participation in general education predicted enrollment in postsecondary education for students with disabilities, and Hoffman (2008) emphasized the importance of

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inclusion in general education for postsecondary education. However, other studies have shown students need more than participation in general education to be successful in postsecondary settings (Balfanz, 2009; Post, 2013). Despite a 62% increase in inclusion in general education, the graduation rate of students with disabilities has not risen (Goodman et al., 2011).

In addition to time spent in general education, student grade point average (GPA) is used as an indicator of students' college and career readiness, and GPA remains a major criterion for postsecondary school admission and initial employment opportunities (Camara & Echternacht, 2000; Test et al., 2009). McDonnall and Crudden (2009) reported academic achievement was a predictor of post-school employment for students with disabilities. Other studies have found that low GPAs prohibited students from attending postsecondary education, and GPA predicted employment (i.e., Horn, Berktold, & Bobbitt, 1999; Leonard, Beauvais, & Scholl, 1999). Neild and Balfanz (2006) determined failure in core courses, specifically English and math, to be a predictor of high school dropout. There is no doubt, GPA is important for post-school success, but does GPA alone represent one's readiness for postsecondary education and employment?

The Institute of Education Sciences (2012) recognized behavioral, social, communicative, functional, occupational, and basic academic skills enabled individuals with disabilities to become employed and participate in postsecondary education. They considered basic academic skills as reading, spelling, and math calculation, but did not identify specific abilities for the remaining skill areas. McConnell et al. (2013) remedied this deficiency by reporting research-identified non-academic skills associated with post-school employment and education, such as persistence, interacting with others, paid work experience, and goal setting, from numerous studies (e.g., Benz, Lindstrom, & Yovanoff, 2000; Doren & Benz, 1998; Goldberg, Higgins, Raskind, & Herman, 2003; Halpern, Yovanoff, Doren, & Benz, 1995; Test et al., 2009). Martin, Hennessey, McConnell, Terry, and Willis (2015a) used McConnell et al.'s (2013) research to create the Transition Assessment and Goal Generator (TAGG), which measures students' non-academic skills and behaviors associated with post–high school further education and employment. It follows that if both academic and non-academic behaviors are associated with post–high school education and employment, both categories of behaviors should be investigated together to determine the extent to which relations exist among them.

As previously stated, participation in general education classes and student GPA have been found to predict post-school employment and education outcomes for students with disabilities (Adelman, 2006; Baer et al., 2003; DaDeppo, 2009; Oakes & Saunders, 2007). Yet, no research has examined how participation in general education and GPAs relate to non-academic behaviors associated with student post-school employment and education and whether other skills are needed. Perhaps, student skills involved in obtaining high GPAs and receiving instruction in general education could be similar to non-academic skills students need for postsecondary education and employment. If a relation does not exist, this demonstrates a need for additional skills to be taught to ease the transition to post-school life regardless of instructional placement and GPA. If a strong relation does exist, we can assert students with high GPAs and who receive instruction in the general education setting also possess the non-academic skills needed for postsecondary employment and education.

Thus, the purpose of this study was to examine the extent relations exist between non-academic behaviors research has identified as associated with post-school education and employment measured by the TAGG and (a) percentage of time secondary students with disabilities receive instruction in general education, (b) GPA of secondary students with disabilities, and (c) each TAGG construct and percentage of time spent in general education and student GPA.

Method

Institutional Review Board (IRB) approval was secured before recruitment began. All participants consented to the study. Because this was a multi-year study, IRB approval was reevaluated and granted each year.

Participants

Sample. Over 2 academic years, 1,219 individuals from 49 school districts across nine states (650 students with disabilities, 497 family members, and 72 high school special educators) participated in this study. Data were collected from 650 students with disabilities from three sources: their high school special educators (n = 72), their family members (n = 497), and the students themselves (n = 650). Students were enrolled in 49 different school districts across nine states, and data were obtained for all 650 students from the special educator and the student.

Power analysis. An a priori estimation of a minimum sample size using Faul, Erdfelder, Buchner, and Lang's (2009) G*Power 3.1 power analysis test for correlational analysis indicated at least 138 TAGG assessments from educators, family members, and students, and student transcripts were needed to achieve a moderate correlation of .30 with an alpha set at .05.

Inclusion criteria. The educator participant inclusionary criteria consisted of being a special education teacher or secondary transition coordinator responsible for completing transition plans for students 14 to 21 years of age. Educators

obtained assent and consent for students and consenting students' family members to participate in this study. Inclusion criteria for students included (a) high school students with individualized education programs (IEPs) and mild to moderate disability, as identified by the educator, and (b) signed consent and assent forms. Consenting students' family members included parents or stepparents, grandparents, or other legal guardians.

Recruitment. To obtain a sample of educators who served transition-aged students, we contacted via email state secondary transition conference attendees. Of the 120 educators who indicated interest in participating and received study materials, 61% (n = 72) returned principal agreement letters, consent and assent forms, transcripts, and completed TAGGs.

Educator participants. The majority of the 72 educator participants (93%) identified themselves as female special education teachers with an average of 16.1 years of teaching experience. Over 80% identified themselves as White (n = 59), 14% Black (n = 14), 4% Hispanic (n = 3), and 6% (n = 4) Native American. Educators completed the Professional version of the TAGG for each student participant, resulting in 650 completed TAGG professional versions.

Family member participants. Seventy-nine percent of 497 family member participants who completed the TAGG identified themselves as mothers or stepmothers, 8% as fathers or stepfathers, and 4% as grandmothers. Approximately 98% of the family member participants reported the student participants lived in the home with them. The majority of family members identified themselves as White (74%; n = 368), 10% as Black (n = 50), 11% as Hispanic (n = 54), and 5% (n = 25) as Native American. The majority of family members reported a high school diploma or lower as their highest level of education (53%; n = 264) and 18% (n = 87) reported having a bachelor's degree or higher.

Student participants. Educator participants completed demographic information for student participants and reported all of the 650 high school student participants received special education services with the majority being identified as having a specific learning disability (59%) or labeled under other health impairment (13%). The sample contained slightly more males (55.4%) than females, and the average age of the students was 16.7 years (SD = 2.38). Fifty-eight percent (n = 380) received free or reduced lunch. Each of the 650 student participants completed the Student version of the TAGG.

Predictor (Independent) Variables

Independent or predictor variables included percentage of time in the general education setting and student GPA. The percentage of time in the general education setting was obtained from student demographic information completed by the students' participating educators. Student GPA was obtained from high school transcripts.

Percentage of time in general education. Educators indicated the number of periods in each student's school day on the student demographic forms. The educator indicated the number of periods in which each student received instruction in the general education setting. We calculated percentage of time in general education by dividing the number of periods educators indicated the students spent in general education by the number of total periods in the student's school day and then multiplied the quotient by 100.

GPA. We obtained transcripts for 650 participating students across nine states and used the unweighted method to calculate GPA. We first calculated GPA on a 4-point scale where an A earned a value of 4, B earned a value of 3, C earned a value of 2, D earned a value of 1, and F earned a value of zero. We assigned a grading scale as follows: (a) A = 90 to 100, (b) B = 80 to 89, (c) C = 70 to 79, (d) D = 60 to 69, and (e) F = 0 to 59. To remain consistent, we dismissed the use of qualifiers such as "+" or "−" that split every grade into three sub-grades such as "B+," "B," and "B−," because there was no way to determine whether student transcripts that did not include these qualifiers earned a "High B," and so on.

Second, we calculated the unweighted average GPA. To do this, we first assigned the specified value to each earned grade and multiplied the grade by the number of corresponding credit hours attempted. We added all the products from the previous step to get a sum, and then divided the sum by the total number of credits attempted.

We determined core courses as English, math, social studies, and science to determine core GPA. The same GPA method described above was used to calculate core GPA and GPA by grade. To determine which course names should be included as core classes, we first looked for common core course names, such as English I, Algebra I, biology, and U.S. history. If a traditional core course did not exist, we then looked for a course from the corresponding subject matter used in place of a core course, such as basic reading and writing, basic math, fundamentals of math, and applications of science. These less common courses were used only when a common course did not exist.

Grades were entered as shown on the school transcript. If pass/fail grades were assigned and not calculated into GPA, we did not include them in GPA. If a school included civics under a social studies heading, we entered the grade under social studies.

GPA inter-rater agreement. To assess inter-rater agreement of GPA calculation, the primary researcher entered all de-identified data. Then a second researcher used randomly

selected transcripts and coded 30% of the student sample (n = 209). The transcripts were re-entered into the spreadsheet. A second researcher independently calculated an unweighted overall GPA. We calculated inter-rater agreement by dividing the total number of agreements by the total number of possible agreements (1,282 / 1,365 = .94) to determine an inter-rater agreement of 94% (range 90%–97.1%). Inter-rater agreement levels above 90% ensure that the GPA protocol was clear, could be reproduced, and the scoring system produces reliable scores (Cooper, Heron, & Heward, 2007).

Criterion (Dependent) Variables

The dependent or criterion variables for this study were the TAGG total score and TAGG construct scores for the Professional, Family, and Student versions.

Instrumentation

Non-academic behaviors associated with post-school employment and education for students with disabilities were identified and arranged into constructs by McConnell et al. (2013). These constructs were used to create the initial version of the TAGG, which included 75 items across 10 constructs presented in three versions: (a) Professional, (b) Family, and (c) Student. Martin, Hennessey, McConnell, Terry, and Willis (2015b) applied factor analysis and confirmatory factor analysis techniques across two independent samples completed a year apart to TAGG data collected from 650 students, 72 educators, and 497 family TAGG users from nine states. Based on the results, the TAGG is a 34-item assessment arranged into eight constructs for the Professional and Family versions: (a) strengths and limitations, (b) disability awareness, (c) persistence, (d) interacting with others, (e) goal setting and attainment, (f) employment, (g) student involvement in the IEP, and (h) support community, and the Student version has 34 parallel items across seven constructs due to strengths and limitations and support community constructs collapsing into one construct.

Reliability. Each TAGG version is highly reliable, with Cronbach's alpha ranging from α = .89 to α = .95. A test–retest measure of stability of total TAGG scores for the three versions approximately 14 weeks apart yielded statistically significant ($p < .01$) large correlations of .80, .70, and .70 for 102 professional, 92 family, and 102 student TAGG scores, respectively. The total scores across the three TAGG versions showed statistically significant ($p < .01$) medium-size correlations, yielding a sound agreement among raters. Pearson product–moment correlation coefficients, Professional Family (n = 269), Professional Student (n = 339), and Family Student TAGG (n = 268) versions yielded the values of .38, .37, and .31, respectively (Martin et al., 2015b).

Validity. TAGG developers are currently gathering extensive validity evidence. Thus far, the following sources of validity evidence have been determined: (a) Evidence based on test content—TAGG constructs derived from an in-depth literature review of indicators of post-school education and employment by transition and assessment experts. (b) Evidence based on response processes—The TAGG developers observed 20 administrations of the TAGG across four states. The comments and questions from test takers were considered in revisions of the assessment. (c) Evidence based on internal structure—Results of exploratory and confirmatory factor analyses decreased the number of items from 75 to 34 for all three versions of the TAGG with a decrease in factors from 10 to 8. Fit of the model was adequate across all three versions of the assessment (TAGG-P: χ^2 = 1043.62, df = 499; root mean square error of approximation [RMSEA] = .058, comparative fit index [CFI] = .92, Tucker–Lewis index [TLI] = .91, and root mean square residual [RMSR] = .0597; TAGG-F: χ^2 = 862.74, df = 499; RMSEA = .0570, CFI = .91, TLI = .90, and RMSR = .058; TAGG-S: χ^2 = 819.00, df = 505; RMSEA = .0466, CFI = .89, TLI = .88, and RMSR = .064). Two replication studies were conducted using multigroup confirmatory factor analyses, again showing adequate fit of the model to all three versions of the TAGG (Replication 1: TAGG-P: χ^2 = 2863.49, df = 1021, RMSEA = .072, CFI = .88, TLI = .88, RMSR = .065; TAGG-F: χ^2 = 1995.76, df = 1087, RMSEA = .0579, CFI = .89, TLI = .89, RMSR = .0679; TAGG-S: χ^2 = 1879.42, df = 1028, RMSEA = .0490, CFI = .87, TLI = .86, RMSR = .0762; Replication 2: TAGG-P: χ^2 = 3419.9186, df = 1087, RMSEA = .06, CFI = .91, TLI = .91, RMSR = 0.06; TAGG-F: χ^2 = 4042.4445, df = 1086, RMSEA = .07, CFI = .87, TLI = .82, RMSR = 0.061; TAGG-S: χ^2 = 2371.0163, df = 1094, RMSEA = .04, CFI = .88, TLI = .88, RMSR = 0.058). Results of item response theory analyses confirmed the adequacy of response patterns for all items within subscales, suggesting the TAGG shows adequate evidence of validity based on internal structure. (d) Evidence based on relations to other variables—Discriminant validity evidence was established by investigating the relations between TAGG scores and socioeconomic status (SES), gender and disability category (Martin et al., 2015b).

TAGG versions. The TAGG Professional, Family, and Student versions were parallel in content and form. All three versions used a Likert-type scoring method for 31 of the 34 items. Three of the 34 items required a yes or no response. Educators and family members scored the 31 Likert-type items using a 1 to 5 scale, with 1 representing the student rarely engaged in the behavior or experience, and 5 representing the student engaged in the behavior or experience often. Students scored the 31 Likert-type items using a 1 to 3 scale, representing rarely, sometimes, and often, respectively. Test developers wrote the Professional version at a 10.4 Flesch–Kincaid grade level, the Family version at a 5.7

Flesch–Kincaid grade level, and the Student version at a 4.8 Flesch–Kincaid grade level. Test directions indicated that all three versions could be read aloud and questions could be asked for clarification of items.

Procedures

After watching a training video describing consent, assent, and administration procedures, educators completed demographic forms for themselves and participating students due to student demographic forms requiring information from the students' educational records. Consenting family members completed their own demographic forms. Educators completed the Professional TAGG, administered the TAGG to the participating students, distributed TAGGs to family members, and returned the TAGGs, demographic forms, and transcripts.

Research Design

A correlational research design following Thompson, Diamond, McWilliam, Snyder, and Snyder's (2005) quality indicators was used for this study. Educator, family, and student scores of each of the eight TAGG constructs and overall TAGG scores were compared with student GPA and percentage of time in the general education setting. We analyzed the results to determine whether a relation existed between GPA or percentage of time spent in general education and the student non-academic skills measured by the TAGG using a correlational design at a required significance level of .05. Pearson's r was used to report the correlation coefficient. Jackson (2006) recommended the following guidelines to interpret Pearson's correlation coefficient: (a) weak .00 to ±.29, (b) moderate ±.30 to ±.69, and (c) strong ±.70 to ±1.00.

Because we used GPA and percentage of time in general education as predictor (independent) variables and TAGG scores as criterion (dependent) variables, r was analyzed to interpret the strength of the relations found. By squaring the correlation coefficient, the amount of variance that is accounted for by the linear relation was determined. Jackson (2006) recommended the following guidelines to interpret coefficient of determination strengths: (a) too low to be meaningful .00 to .16, (b) low .17 to .29, (c) moderate .30 to .49, (d) moderate to strong .50 to .59, and (e) strong .60 to 1.00.

Results

Result of the Percentage of Time in General Education Calculation

The students in this sample received approximately 69.25% of instruction in the general education setting (SD = 26.35), with individual placements ranging from 0% of instruction in the general education setting to 100% of instruction received in the general education setting.

TAGG scores in relation to percentage of time in general education. Jackson (2006) asserted Pearson product–moment correlation coefficients between .29 and −.29 to have weak strength, and coefficients of determination below .16 are too low to be meaningful. As depicted in Table 1, the relation between overall TAGG scores from educator, family, and student versions and percentage of time in general education yielded a significant positive correlation too low to be meaningful, $r(651) = .102$ for the educator version, $p = .009$; $r(468) = .096$ for the family version, $p = .038$; $r(640) = .091$, $p = .020$ for the student version.

Construct level results for percentage of time in general education. At the construct level, only the relation between the construct Interacting With Others and percentage of time in general education yielded significant correlations for the educator version, $r(649) = .232$, $p = .000$, family member version, $r(466) = .176$, $p = .000$, and student version, $r(640) = .150$, $p = .000$. However, these correlations did not account for enough variance to be considered meaningful ($R^2 = .054$, $R^2 = .030$, and $R^2 = .023$, respectively). Percentage of time students received instruction in the general education setting accounted for a very small percentage of variance in overall TAGG scores provided by educators (1%), family members (.9%), and students (.8%).

Results of GPA Calculation

The students in this sample, on average, earned a GPA of 2.49 (SD = .60). The individual GPAs ranged from a low of .00 to .49 to high GPAs of 3.5 to 4.00.

TAGG scores in relation to GPA. The overall TAGG scores provided by educators and students did not provide statistically significant correlations with student GPA or account for meaningful variance, $r(646) = .072$, $p = .054$; $r(637) = -.045$, $p = .255$. Overall family TAGG scores yielded very weak, negative correlations and were significant, yet did not provide a meaningful coefficient of determination, $r(460) = -.101$, $p = .031$. Student GPA accounted for a small percentage of variance (R^2) in overall TAGG scores provided by educators (.6%), family members (1%), and students (.2%).

Construct level results for GPA. Construct level scores provided by the professional yielded significant correlations too low to be considered meaningful in Persistence and Interacting With Others, $r(646) = .103$, $p = .009$; $r(645) = .112$, $p = .004$. Family and Student TAGG scores in the areas of Strengths and Limitations and Student Involvement in the IEP yielded significant correlations too

Table 1. Pearson Correlations and Coefficient of Determination for TAGG Scores, Percentage of Time in General Education and Student GPA.

	Professional		Family member		Student	
Construct	*r*	R^2	*r*	R^2	*r*	R^2
TAGG and percentage of time in general education						
Strengths and limitations	.028	.001	.003	.000	.118**	.014
Disability awareness	−.024	.001	−.005	.000	−.075	.006
Persistence	.113**	.013	.063	.004	.069	.005
Interacting with others	.232**	.054	.176**	.030	.150**	.023
Goal setting and attainment	.094*	.009	.088	.008	.076	.006
Employment	.052	.003	.087	.008	.074	.005
Involvement in the individualized education program (IEP)	.110**	.012	.091	.008	.035	.001
Support community	.034	.001	.115*	.013	.118**	.014
Total TAGG score	.102**	.010	.096*	.009	.091*	.008
TAGG and GPA						
Strengths and limitations	.018	.000	−.096*	.008	−.082*	.007
Disability awareness	.041	.002	−.123**	.015	−.064	.004
Persistence	.103**	.011	−.029	.001	.030	.001
Interacting with others	.112**	.013	.059	.003	−.010	.000
Goal setting and attainment	.068	.005	−.111*	.012	.014	.000
Employment	.072	.005	−.054	.003	.018	.000
Involvement in the IEP	−.016	.000	−.102*	.010	−.091*	.008
Support community	.080*	.006	−.079	.006	−.082*	.007
Total TAGG score	.076	.006	−.101*	.010	−.045	.002
TAGG scores and core GPA						
Strengths and limitations	.108*	.012	−.118*	.014	−.061	.004
Disability awareness	.091*	.008	−.088	.008	.042	.002
Persistence	.332**	.110	.010	.000	.049	.002
Interacting with others	.213**	.045	.127**	.016	.092*	.008
Goal setting and attainment	.197**	.039	−.140**	.020	.065	.004
Employment	.135**	.018	−.094*	.009	−.004	.000
Involvement in the IEP	.059	.003	−.102*	.010	−.045	.002
Support community	.238**	.057	−.049	.002	−.061	.004
Total TAGG score	.243**	.059	−.085	.007	.028	.000
TAGG scores and English GPA						
Strengths and limitations	.165**	.027	−.113*	.023	−.068	.005
Disability awareness	.133**	.018	−.084	.007	.052	.003
Persistence	.232**	.054	.005	.000	.013	.000
Interacting with others	.079*	.006	.060	.004	.004	.000
Goal setting and attainment	.144**	.021	−.141**	.020	.030	.000
Employment	.052	.003	−.111*	.012	−.010	.000
Involvement in the IEP	.016	.000	−.114*	.013	−.008	.000
Support community	.167**	.028	−.038	.001	−.068	.004
Total TAGG score	.174**	.030	−.092*	.008	−.005	.000
TAGG scores and math GPA						
Strengths and limitations	.108**	.011	−.017	.000	−.034	.001
Disability awareness	.116**	.013	−.045	.002	.080*	.006
Persistence	.217**	.047	.069	.005	.006	.000
Interacting with others	.123**	.015	.135**	.018	.018	.000
Goal setting and attainment	.147**	.021	−.093*	.009	.028	.000
Employment	.072	.005	−.011	.000	−.021	.000
Involvement in the IEP	.012	.000	−.063	.004	−.059	.003
Support community	.191**	.036	.011	.000	−.034	.000
Total TAGG score	.192**	.037	−.021	.000	−.006	.000

Note. TAGG = Transition Assessment and Goal Generator; GPA = grade point average.
*Correlation is significant at the .05 level (two-tailed). **Correlation is significant at the .01 level (two-tailed).

low to be considered meaningful, $r(460) = -.096$, $p = .040$; $r(635) = -.085$, $p = .039$; $r(454) = -.102$, $p = .030$; $r(634) = -.091$, $p = .022$, respectively. Family member scores also revealed significant correlations too low to be considered meaningful in the areas of Disability Awareness and Goal Setting and Attainment, $r(459) = -.123$, $p = .008$; $r(458) = -.111$, $p = .018$.

TAGG scores in relation to core GPA. Overall construct scores for student and family versions did not provide statistically significant correlations to core GPA, $r(630) = .028$, $p = .485$; $r(459) = -.085$, $p = .070$; however, TAGG scores provided by educators did produce a weak significant correlation, $r(641) = .243$, $p = .000$. Core GPA accounted for 6% of variance in professional scores, 1% in family members scores, and 0% in student scores.

Construct level results for core. TAGG scores and core GPA provided by professionals produced six weak significant correlations with correlation coefficients too low to be meaningful, the highest being Interacting With Others $r(640) = .213$, $p = .000$, Goal Setting and Attainment $r(639) = .197$, $p = .000$, and Supports $r(639) = .238$, $p = .000$, and one moderate correlation in the area of Persistence $r(641) = .332$, $p = .000$. Family and Student TAGG scores yielded no meaningfully significant correlations.

TAGG scores in relation to English GPA. Breaking core courses into English alone revealed a very weak positive correlation between total TAGG scores and English GPA, $r(630) = .174$, $p = .000$. No meaningful correlations existed between total TAGG scores for the Family or Student versions, $r(452) = -.092$, $p = .049$; $r(620) = -.005$, $p = .897$. English GPA accounted for a very small amount of variance (R^2) in overall TAGG scores provided by educators (.3%) and family members (.01%), and none of the variance in student scores (0%). See Table 1 for more information on the relations between TAGG scores and student GPA.

Construct level results for English. At the construct level, scores provided by the professionals yielded six weak correlations with the highest correlations in the constructs: (a) Strengths and Limitations, $r(630) = .165$, $p = .000$; (b) Persistence, $r(630) = .232$, $p = .000$; and (c) Support Community, $r(630) = .232$, $p = .000$. Family and Student scores did not yield any meaningful correlations.

TAGG scores in relation to math GPA. Again, scores provided by professionals yielded a weak significant correlation with math GPA, $r(629) = .192$, $p = .000$. No meaningful correlations existed between total TAGG scores for the Family or Student versions, $r(450) = -.021$, $p = .657$; $r(620) = -.006$, $p = .885$. Math GPA accounted for minute amounts of variance (R^2) in overall TAGG scores provided by educators (.4%) and none of the variance in family (0%) or student scores (0%).

Construct level results for math. Scores provided by professionals yielded six weak correlations with the highest in the areas of Persistence, $r(629) = .217$, $p = .000$, and Support Community, $r(629) = .191$, $p = .000$. No meaningful correlations existed among TAGG scores provided by family members or students and math GPA.

Discussion

The purpose of this study was to determine the extent relations exist between non-academic indicators of employment and postsecondary education for youth with disabilities measured by the TAGG and (a) percentage of time secondary students with disabilities receive instruction in general education and (b) GPA of secondary students with disabilities. Specifically, do students who have high GPAs and receive more instruction in the general education setting possess more of the skills measured by the TAGG than those with lower GPAs and who receive less instruction in the general education setting? A correlational analysis of TAGG scores completed on 650 students by 72 educators, 497 family members, and 650 students from nine states was conducted, which far exceeded the minimum a priori power analysis number of 138 pieces of data to attain a moderate correlation of .30, if the correlation exists.

Results of this study indicate non-academic behaviors associated with employment and further education measured by the TAGG are different than behaviors associated with the percentage of time students receive instruction in the general education classroom or student GPA. Overall TAGG scores provided by educators, family members, and students provided very weak significant positive correlations and variance too low to be meaningful with the students' percentage of time in general education. Student GPA and overall family TAGG scores did yield a weak, significant negative correlation, but did not provide a meaningful coefficient of determination. At the construct level, students who received more instruction in the general education setting tended to score slightly higher in the Interacting With Others construct, yet the low correlations suggest no meaningful relation. When examining the GPA results and separating the core GPA (English, math, science, and social studies) from electives, we found the only moderate correlation to be in the area of Persistence based on professional scores.

Non-Academic Skills in Relation to Educational Setting and GPA

The percentage of time students received instruction in the general education setting ranged from 0% to 100% and had very little connection with the non-academic behaviors

measured by the TAGG. The only construct to yield a small significant relation to educational setting was Interacting With Others. Interacting With Others requires students to successfully intermingle with others in a variety of settings, including the general education setting (Goldberg et al., 2003). Students who can get along with others are more likely to be successful in group work, requesting assistance from teachers and peers, and spend less time out of the classroom due to disciplinary issues. Including students in the general education setting may be important to meet college entry requirements, but the curriculum may not include systematic instruction of non-academic skills needed for post-school employment and education.

A student's high school GPA is often used as a criterion for admittance into postsecondary education and as a determination for scholarships (Post, 2013). Many times, students with high GPAs are thought to possess all needed skills to succeed after high school (Post, 2013), yet no relation was found between student GPA and TAGG scores. Only scores provided by professionals yielded a moderate correlation with Persistence when comparing core GPA and TAGG scores. A student's GPA is often a reflection of a student's effort put forth in a class (Hu, McCormick, & Gonyea, 2012); therefore, it is not surprising that student GPA and student behaviors related to persistence yielded the highest correlation for professionals. Persistence requires students to put forth effort even when tasks become difficult (Goldberg et al., 2003), which is often reflected in a student's grades. Interestingly, scores provided by students and family members did not correlate with Persistence.

The accountability movement in today's education reform has resulted in three fourths of states increasing the number of credits required for graduation, with math seeing the largest increase in credits and English required at every grade level. It has not been determined whether the increase in core subjects has had an impact on post-school outcomes (Balfanz, 2009). When examining TAGG scores in relation to math and English GPA, all correlations were weak with none providing meaningful variance in scores. Students who excel in these areas are often thought to be ready for life after high school, yet may not possess non-academic indicators of post-school employment and education measured by the TAGG.

Importance of This Study

Research indicates the percentage of time students receive instruction in general education, student GPA, and the research-identified non-academic constructs measured by the TAGG are related to post-school employment and education, yet TAGG scores, GPA, and percentage of time in general education are not related to one another. Taking required courses for postsecondary education and receiving high grades are important, but alone do not give a clear picture of whether students with disabilities will be successful in post-school academic or employment settings. Assessing non-academic skills related to employment and further education can complete this picture of skills students with disabilities will need after leaving high school. The results suggest that student GPA and the percentage of time instruction received in the general education setting cannot indicate a student has all skills needed after high school for employment and further education. Thus, more is needed for college and career success.

Implications for Practice

Recent special education policies stressing the importance of preparing students to be college and career ready and the increased pressure to pass high-stakes tests have resulted in more students with disabilities placed in general education settings with a resulting emphasis on academic skills without an improvement in student outcomes (Balfanz, 2009; Goodman et al., 2011). As the results of this study suggest, academics alone will not prepare students with disabilities for post–high school employment and education. As Balfanz (2009) indicated, a strict focus on teaching academics alone without teaching and providing students the opportunity to practice and generalize non-academic skills may result in students with disabilities not successfully transitioning into postsecondary education and employment.

This study has shown the TAGG assesses behaviors and skills not related to student GPA or instructional setting, yet these skills are needed for postsecondary employment and education. We must continue to reform efforts to include all skills for postsecondary life, which requires more than number and rigor of academic courses and includes proficiencies needed for college completion and the workplace (Balfanz, 2009). The TAGG identifies individualized non-academic skills students with disabilities need to attain and could assist to bridge the gap between the focus on academic skills and other skills needed for a successful transition into postsecondary education and employment.

Limitations and Future Research

TAGG developers recruited educators to complete the TAGG on multiple students who consented and assented to the study. On average, each teacher completed a TAGG on nine different students. This method increased the number of students and family members who completed the TAGG versus each educator completing the assessment on only one student. It may seem as though we have a lower number of educator participants than students and family members; however, each educator provided TAGG assessments for several students, which led to a higher number of evidence pieces. Future research needs to replicate these results across additional groups of secondary special educators.

At this time, no studies exist indicating the relative importance of a particular construct or group of constructs to postsecondary employment and education of former students with disabilities. A follow-up study is needed of high school students who completed the TAGG to determine the relation between TAGG scores and post–high school student employment and education outcomes. These results may be able to determine the TAGG constructs and items that best predict post-school employment and education.

Conclusion

Many states have increased requirements needed for students to receive a high school diploma, including taking more rigorous academic courses and passing standardized tests, yet these requirements have not resulted in an increase of student performance in postsecondary education or employment outcomes (Conley, 2007). Berzin and Kelly (2009) found student placement alone did not lead to better post-school outcomes, and special education, remedial, and general education placement all resulted in similar transition outcomes for students with disabilities. This suggests that simply placing students in the general education classroom is not enough to affect the employment and further education futures of students with disabilities. Academic factors alone cannot adequately describe the performance of youth with disabilities in postsecondary settings (Murray & Wren, 2003). Students must also learn critical non-academic behaviors research identified as being associated with further education and employment. The TAGG measures the non-academic behaviors students need to complement GPA and experiences gained in general education settings. The results of this study suggest the need to teach students with disabilities the non-academic skills associated with post-school employment and further education the TAGG measures.

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References

Adelman, C. (2006). *The toolbox revisited: Paths to degree completion from high school through college*. Washington, DC: U.S. Department of Education.

Baer, R. M., Daviso, A. W., Flexer, R. W., Queen, R. M., & Meindl, R. S. (2011). Students with intellectual disabilities: Predictors of transition outcomes. *Career Development for Exceptional Individuals*, *34*, 132–141. doi:10.1177/0885728811399090

Baer, R. M., Flexer, R. W., Beck, S., Amstutz, N., Hoffman, L., Brothers, J., . . .Zechman, C. (2003). A collaborative follow-up study on transition service utilization and post-school outcomes. *Career Development for Exceptional Individuals*, *26*, 7–25.

Balfanz, R. (2009). Can the American high school become an avenue of advancement for all? *Future of Children*, *19*, 17–36.

Benz, M. R., Lindstrom, L., & Yovanoff, P. (2000). Improving graduation and employment outcomes of students with disabilities: Predictive factors and student perspectives. *Exceptional Children*, *66*, 509–541.

Berzin, S. C., & Kelly, M. S. (2009). Disability and post-high school transition: Does placement in special education improve outcomes for young people? *Advances in School Mental Health Promotion*, *2*, 17–29.

Browder, D. M., Spooner, F., Wakeman, S., Trela, K., & Baker, J. N. (2006). Aligning instruction with academic content standards: Finding the link. *Research and Practice for Persons with Severe Disabilities*, *31*, 309–321.

Camara, W. J., & Echternacht, G. (2000). *The SAT® I and high school grades: Utility in predicting success in* college (Report No. CB-RN-10). New York, NY: College Entrance Examination Board.

Conley, D. T. (2007). *Toward a more comprehensive conception of college readiness: Prepared for the Bill and Melinda Gates foundation*. Retrieved from https://www.google.com/url?sa=t&;rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB8QFjAA&url=https%3A%2F%2Fdocs.gatesfoundation.org%2Fdocuments%2Fcollegereadinesspaper.pdf&ei=56EIVcqBCYb1oASB4IKwBQ&usg=AFQjCNGXeqamoib42TGZmvpWYXbBDFBxBg&bvm=bv.88528373,d.cGU

Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied behavior analysis* (2nd ed.). Upper Saddle River, NJ: Pearson.

DaDeppo, L. (2009). Integration factors related to the academic success and intent to persist of college students with learning disabilities. *Learning Disabilities Research & Practice*, *24*, 122–131.

Doren, B., & Benz, M. (1998). Employment inequality revisited: Predictors of better employment outcomes for young women with disabilities in transition. *The Journal of Special Education*, *31*, 425–442.

Erickson, W., Lee, C., & von Schrader, S. (2014). 2012 disability status report, United States. Ithaca, NY: *Cornell University Employment and Disability Institute*.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*, 1149–1160.

Goldberg, R., Higgins, E., Raskind, M., & Herman, K. (2003). Predictors of success in individuals with learning disabilities: A qualitative analysis of a 20-year longitudinal study. *Learning Disabilities Research Practice*, *18*(4), 222–236.

Goodman, J. I., Hazelkorn, M., Bucholz, J. L., Duffy, M. L., & Kitta, Y. (2011). Inclusion and graduation rates: What are the outcomes? *Journal of Disability Policy Studies*, *21*, 241–252.

Halpern, A. S., Yovanoff, P., Doren, B., & Benz, M. R. (1995). Predicting participation in postsecondary education for school leavers with disabilities. *Exceptional Children*, *62*, 151–164.

Hoffman, A. V. (2008). *Examining the plans of youth with disabilities to enroll in a 2- or 4-year college or university* (Doctoral dissertation). Available from ProQuest Dissertations & Theses database. (Order No. 3307880)

Horn, L., Berktold, J., & Bobbitt, L. (1999). *Students with disabilities in postsecondary education: A profile of preparation, participation, and outcomes* (NCES 1999-187). Washington, DC: U.S. Department of Education, National Center for Educational Statistics.

Hu, S., McCormick, A. C., & Gonyea, R. M. (2012). Examining the relationship between student learning and persistence. *Innovative Higher Education*, *37*, 387–395.

Institute of Education Sciences. (2012). *Special education research grant programs* (CFDA No. 84.324A). Retrieved from http://ies.ed.gov/funding/ncser_rfas/ncser_transition.asp

Jackson, S. L. (2006). *Research methods and statistics: A critical thinking approach*. Belmont, CA: Thomson Wadsworth.

Leonard, N. H., Beauvais, L. L., & Scholl, R. W. (1999). Work motivation: The incorporation of self concept-based processes. *Human Relations*, *52*, 969–998.

Martin, J. E., Hennessey, M. N., McConnell, A. E., Terry, R. A., & Willis, D. M. (2015a). *Transition assessment and goal generator*. Norman, OK: University of Oklahoma's Zarrow Center.

Martin, J. E., Hennessey, M. N., McConnell, A. E., Terry, R. A., & Willis, D. M. (2015b). *Transition assessment and goal generator technical manual*. Retrieved from https://tagg.ou.edu/tagg/manual

Mazzotti, V. L., Rowe, D. A., Cameto, R., Test, D. W., & Morningstar, M. E. (2013). Identifying and promoting transition evidence-based practices and predictors of success: A position paper of the division on career development and transition. *Career Development and Transition for Exceptional Individuals*, *36*, 140–151.

McConnell, A., Martin, J. E., Juan, C. Y., Hennessey, M. N., Terry, R., El-Kazimi, N., . . .Willis, D. (2013). Identifying nonacademic behaviors associated with post-school employment and education. *Career Development and Transition for Exceptional Individuals*, *36*, 174–187.

McDonnall, M. C., & Crudden, A. (2009). Factors affecting the success of transition aged youths with visual impairments. *Journal of Visual Impairments & Blindness*, *103*, 329–341.

Murray, C., & Wren, C. (2003). Cognitive, academic, and attitudinal predictors of the grade point averages of college students with learning disabilities. *Journal of Learning Disabilities*, *36*, 407–415.

The National Collaborative on Workforce & Disability for Youth and Workforce Strategy Center. (2009). *Career-focused services for students with disabilities at community colleges*. Washington, DC: Institute for Educational Leadership.

Neild, R. C., & Balfanz, R. (2006). *Unfulfilled promise: The dimensions and characteristics of Philadelphia's dropout crisis, 2000-2005*. Baltimore, MD: Center for Social Organization of Schools, Johns Hopkins University.

Oakes, J., & Saunders, M. (2007). *Multiple pathways: School reform that promises to prepare all students for college, career, and civic responsibility* (Multiple perspectives on multiple pathways series). UCLA's Institute for Democracy, Education, and Access. Retrieved from http://repositories.cdlib.org/idea/mp/mp-rr002-0207

Post, J. L. (2013). *The role of dual enrollment in the educational achievement of technical college students* (Unpublished doctoral dissertation). University of Georgia, Athens. Retrieved from https://getd.libs.uga.edu/pdfs/post_julie_l_201305_edd.pdf

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). Menlo Park, CA: SRI International.

Test, D. W., Mazzotti, V. L., Mustian, A. L., Fowler, C. H., Kortering, L. J., & Kohler, P. H. (2009). Evidence-based secondary transition predictors for improving post-school outcomes for students with disabilities. *Career Development for Exceptional Individuals*, *32*, 160–181.

Thompson, B., Diamond, K., McWilliam, R., Snyder, P., & Snyder, S. (2005). Evaluating the quality of evidence from correlational research for evidence-based practice. *Exceptional Children*, *71*, 181–194.