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A Demonstration Model of Interagency Collaboration for Students With Disabilities: A Multilevel Approach

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Abstract

Communicating Interagency Relationships and Collaborative Linkages for Exceptional Students (CIRCLES) is a transition-planning service delivery model designed to guide schools in implementing interagency collaboration. This study examined the impact of CIRCLES on students' self-determination and participation in individualized education program (IEP) meetings. Forty-four schools located in the Southeast United States were assigned randomly into either the CIRCLES or business-as-usual (BAU) conditions, and 877 high school students with disabilities were included in the analyses. Two-level hierarchical linear models, with students at Level 1 and schools at Level 2, examined the effectiveness of CIRCLES. Results indicated students in the CIRCLES condition had higher levels of self-determination (Hedges's g = .06–.38) and greater IEP participation (Hedges's g = .77). Implications for practice and suggestions for future research are provided.

Keywords

transition, interagency collaboration, self-determination

Students with disabilities continue to experience poor in-school and postschool outcomes, lagging behind their peers without disabilities. The national graduation rate for students with disabilities is about 50% (U.S. Department of Education, 2010) compared with about 75% for students in general (Stillwell, Sable, & Plotts, 2011). In fact, data from the National Dropout Prevention Center for Students With Disabilities (2013) reported State graduation rates for students with disabilities ranging from 24% to 82% and dropout rates from 0% to 45%.

Based on the need to improve outcomes for students with disabilities, schools are federally mandated to provide transition services beginning no later than age 16 to facilitate a student's successful progression from school to adult life. Transition service mandates have been in place since the Individuals With Disabilities Education Act (IDEA; 1990) and have been extended through subsequent reauthorizations (IDEA, 2004). IDEA (2004) described transition services as "a coordinated set of activities" to address both academic and functional outcomes for children with disabilities and to prepare them for transition from school to postschool living (20 U.S.C. § 1401 sec. 602 [34]). IDEA requires a written component outlining services and activities for transitioning youth with disabilities from high school to adult life be included in their individualized education program (IEP). IDEA further requires the transition-planning process be based on the child's individual interests, strengths, and needs, with goals addressing postsecondary education and training, employment, and independent living.

In addition, IDEA (2004) states that schools "must invite to the IEP meeting a representative of any participating agency that is likely to be responsible for providing or paying for transition services" [34 CFR §300.321(b)(3)], and schools are responsible for following up with service providers to ensure students' needs are being met. It is clear that IDEA intends for transition planning to be a collaborative effort between the school, the student, family, and adult

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service providers and should serve as the starting point for further IEP development.

Research has found interagency collaboration to be a predictor of postschool success in the areas of employment and education. For example, Bullis, Davis, Bull, and Johnson (1995) found students with disabilities who received more interagency support from three or more agencies in high school were more than twice as likely to be engaged in postschool employment and/or education as students who received support from zero to two agencies. Next, Repetto, Webb, Garvan, and Washington (2002) found interagency collaboration for students with disabilities in high school was positively correlated with postschool education success. Furthermore, several qualitative studies have found collaborative efforts between educational, community, and adult service agencies appear to lead to more positive outcomes for individuals with disabilities (Devlieger & Trach, 1999; Gowdy, Carlson, & Rapp, 2003). Most recently, Test, Mazzotti, et al. (2009) conducted a systematic review of secondary transition correlational literature and found interagency collaboration to be an in-school predictor of positive postschool outcomes in the areas of education and employment for students with disabilities. While interagency collaboration has been positively correlated with improved postschool outcomes, there continues to be a lack of interagency collaboration between schools, communities, and adult service providers, which poses difficulties for students with disabilities as they transition from high school to adult life (Taylor, Morgan, & Callow-Heusser, 2016).

To develop a transition component of the IEP linked to students' interests, strengths, and needs, students must be directly involved in their development (Test et al., 2004). This level of participation requires self-determination. Self-determination theory focuses on the belief that an individual is inherently motivated and proactive; however, to experience the world proactively, students with disabilities may need environmental supports to achieve personally and socially in natural environments (Ryan & Deci, 2000; Wehmeyer & Abery, 2013). When students with disabilities are given the opportunity to embrace certain activities and experiences, autonomy is enhanced (Deci & Ryan, 2008; Ryan & Deci, 2000). By including students, parents, employers, and service providers in the transition and IEP planning process via interagency collaboration, students have a greater chance of achieving the necessary skills and supports to live, work, and learn independently after leaving high school.

To ensure students have a voice in the development of their goals for the future, researchers have demonstrated students with disabilities can successfully participate in, and even lead, their own IEPs (Test et al., 2004). Since this review, more recent research on student involvement in IEPs indicates students exhibit greater self-determination (Williams-Diehm, Wehmeyer, Palmer, Soukup, & Garner, 2008). Specifically, students who participate in the IEP process are more informed about the process, experience greater efficacy in planning for their future, and are better able to articulate their goals (Arndt, Konrad, & Test, 2006; Martin et al., 2006). Ultimately, increased student participation in the IEP process has translated into transition planning that is more closely aligned with, and driven by, student interests (Martin, Van Dycke, D'Ottavio, & Nickerson, 2007; Williams-Diehm et al., 2008).

With increased student participation in their IEP and transition planning, as well as solid interagency collaboration, schools can be equipped to prepare students with disabilities for a smooth transition to postschool life. There are barriers to this process, however, that have not led to optimal outcomes for these students (Hendricks & Wehman, 2009). First, some students may experience barriers and low expectations on the part of teachers and parents due to characteristics of their disability (e.g., cognitive disabilities, physically accessing materials, vocal communication limitations; Martin et al., 2006). Second, interagency collaboration is a complex process that requires considerable planning and coordination, usually by one specified teacher or transition specialist (Povenmire-Kirk et al., 2015). Furthermore, due to catchment areas and caseloads for various adult services, agencies often do not have time to send a representative to every child's IEP meeting, of which transition planning is only a small part.

Given these barriers to transition planning, the present conceptual demonstration model study examined the effects of Communicating Interagency Relationships and Collaborative Linkages for Exceptional Students (CIRCLES). CIRCLES is a transition-planning service delivery model designed to guide schools in implementing interagency collaboration at three teams, including Community Team (CT), School Team (ST), and the IEP team, with a focus on student involvement and leadership throughout the process. Based on previous research with the model (Aspel, Bettis, Quinn, Test, & Wood, 1999; Povenmire-Kirk et al., 2015), the present study expanded it to a large-scale implementation in multiple school districts. The purpose of the present study was to explore the effects of CIRCLES on students' self-determination and IEP participation. The research questions were as follows:

Research Question 1: Do CIRCLES participants have higher self-determination than participants in the business-as-usual (BAU) condition?
Research Question 2: Do CIRCLES participants have higher IEP participation than participants in the BAU condition?

Method

High schools in two southeastern states were recruited by presenting the research plan to local education agency

(LEA) directors of special education and school principals. Of the 62 schools recruited, 48 volunteered. Schools were then assigned randomly into either the CIRCLES or the BAU condition using a stratified restricted allocation procedure. Schools were first stratified based on location (i.e., schools in the same district/region). Next, schools within strata were matched based on percentage of students receiving free or reduced lunch (FRL). An independent statistician assigned randomly each matched paired into the CIRCLES or BAU condition.

All students in Grades 10 to 12 who were receiving services under IDEA (2004) with an IEP were eligible to participate. Participating schools, both CIRCLES and BAU conditions, were asked to recruit at least 10 students for inclusion in the research component of the study over a 2-year period. All students with disabilities were eligible to participate in the intervention, but outcome data from only students with signed parental permission and child assent were included in the data analyses. CIRCLES schools were compensated US$3,000 each year, which allowed for teacher training and data collection. BAU schools were compensated US$1,000 each year for data collection activities. In the third year, the BAU schools received CIRCLES training.

Of the 48 schools that started the study, four were excluded from the final analyses due to noncompliance. These four schools were all located in two districts. Noncompliance was due to personnel changes and new personnel not implementing the intervention with fidelity or not collecting data as scheduled. After excluding students who did not have parental consent or student assent, the sample sizes ranged from 302 to 463 depending on the outcome variable and condition. The specific sample sizes used in the analyses are reported in Table 2.

Schools' and Participants' Characteristics

School and student characteristics for the 44 schools in this study are reported in Table 1. There were no statistically significant differences between CIRCLES or BAU schools on percentage of students receiving FRL, school size, rural/urban location, or race. For both conditions, approximately half of the students received FRL. School sizes averaged approximately 1,100 students, and 50% of the schools were located in rural settings. Most schools consisted of White students, followed by African American, Hispanic, and multiple races.

Most students who participated in the study were classified as specific learning disabilities, intellectual disabilities, other health impairments, and other. There were no statistically significant differences between the groups on disability classification. There were differences on the grade level of participating students between the groups. The CIRCLES condition had more 12th graders than the BAU condition. Grade level was included in the major analyses to control for potential confounding effects of grade level.

The CIRCLES Intervention

The CIRCLES intervention involved three levels of interagency collaboration including Community Team, School Team, and IEP Team. CIRCLES allowed agencies to provide services directly to students and families who needed involvement from multiple adult service providers.

Community team. The Community Team (CTeam) comprised administrators and supervisors of every agency able to provide transition services and could include Vocational Rehabilitation, Department of Social Services, Health Department, The Arc, Easter Seals, Autism Society, transportation, residential service providers, and any other local service providers. District level staff (e.g., transition coordinator, compliance specialist) organized and convened the CTeam to address larger issues of access to services within the community. The CTeams met 2 to 4 times per year to work on issues at the policy level; they identified gaps and overlaps in services, and worked together to change policy and practice to better serve citizens with disabilities. One key role of CTeam members was to appoint a direct service representative from their agency to serve on the School Team; administrative-level buy-in was vital to the success of the process.

School team. The School Team (STeam) was what made CIRCLES different from other models using interagency transition teams; interagency community-level transition teams exist, but CIRCLES, via the STeam, enabled adult agency representatives to meet directly with students and their families. The STeam was comprised of direct service providers (e.g., case managers, counselors, and care coordinators) from each agency represented on the CTeam, those professionals whom special educators might traditionally invite to attend IEP meetings. Instead of inviting them to attend every student's IEP meeting, district staff responsible for convening CIRCLES meetings invited them to attend one, full-day meeting a month (during the school year), in which the team met with a student every 30 to 45 min, and could see up to 10 students per day. Students used technology (e.g., PowerPoint, Voki, Wobook, GoAnimate) to describe their strengths, areas of need, and postschool goals. Student presentations typically took 3 to 8 min. For the remaining time allotted (20–40 min per student), members of the STeam talked with the student, his or her family, special educators, and one another to determine the best way to deliver transition services to each student. In addition to giving the student, parent, and special educators a personal

Table 1. School and Student Characteristics by Intervention Condition.

	CIRCLES			BAU		
Characteristics	*n*	*M*	*SD*	*n*	*M*	*SD*
School						
Free/reduced lunch	22	52% Range (15%–78%)	17	22	46% Range (19%–83%)	15
		M	*SD*		*M*	*SD*
School size	22	1,112 Range (476–2,557)	473	22	1,187 Range (455–2,065)	388
		n	%		*n*	%
Rural	22	11	50	22	11	50
Student		*n*	%		*n*	%
Race						
White		264	64		310	67
Black		91	22		88	19
Hispanic		37	9		42	9
Asian		8	2		9	2
Multiple		12	3		14	3
Disability						
SLD		125	30		161	35
AU		45	11		34	7
ID		110	27		124	27
OHI		109	27		112	24
Other		23	6		33	7
Grade[a]						
10th		117	28		153	33
11th		94	23		141	30
12th		201	48		171	37

Note. The frequencies and percentages at the student level are based on the self-determination demographic data. Students included in the IEP results were not statistically significantly different from the characteristics reported in Table 1. CIRCLES = Communicating Interagency Relationships and Collaborative Linkages for Exceptional Student; BAU = business-as-usual; SLD = specific learning disability; AU = autism spectrum disorder; ID = intellectual disability; OHI = other health impairments; Other = all other disability categories.
[a]Statistically significant differences in grade level between the CIRCLES and BAU conditions ($\chi^2 = 13.19$, $p < .01$).

contact to associate with each agency, the STeam format also allowed time for appointments to be made and questions to be answered by agency members. Families were able to discuss any needs they may have had (e.g., poverty, homelessness, transportation, food insecurity, and guardianship assistance). Agencies collaborated with one another, the student, and family to create the most comprehensive plan to meet each student's specific needs. After each student was seen, agency members prepared to hear the next student presentation during a short break, and then repeated the process for each new student. STeams typically saw between six and 10 students per day. To ensure follow-through of the plans developed, and because the STeam's main purpose was to develop transition activities and services for the student with a disability, minutes of each STeam meeting were distributed to every member of the STeam and IEP team via the special education teacher, student, and his or her parents.

IEP team. The IEP team was the final team in the CIRCLES multiteam approach. After the STeam meeting, special education teachers took the minutes and any decisions made back to the IEP meeting and wrote the transition component based on the services agreed upon by the STeam. This process enabled the IEP team to write the other components of the IEP with the end goals of the student in mind. Because the district school staff were responsible for convening the CTeam and STeam meetings, the time special education teachers typically spent inviting folks to IEP meetings was freed up for preparing students for STeam and IEP meetings. Student assessments and interviews that go into developing their presentations to the STeam were all part of the

Table 2. Sample Size, Means, Standard Deviations, and Effect Size (Hedges's *g*) for Outcome Measures at the Student and School Levels.

	CIRCLES			BAU			
Outcome Measures	*n*	*M*	*SD*	*n*	*M*	*SD*	Hedges's *g*
Student level							
Educator							
Capacity	407	3.37	0.76	463	3.19	0.82	.23
Opportunity	407	4.06	0.52	463	3.83	0.68	.38
Student							
Capacity	412	3.81	0.70	461	3.77	0.71	.06
Opportunity	412	4.03	0.71	461	3.76	0.75	.37
IEP							
Participation	313	3.44	1.01	302	2.57	1.24	.77
School level							
Educator							
Capacity	22	3.37	0.31	22	3.07	0.36	.90
Opportunity	22	4.03	0.27	22	3.80	0.31	.80
Student							
Capacity	22	3.79	0.24	22	3.74	0.29	.19
Opportunity	22	4.03	0.28	22	3.77	0.25	.99
IEP							
Participation	22	3.51	0.70	22	2.88	0.60	.98

Note. CIRCLES = Communicating Interagency Relationships and Collaborative Linkages for Exceptional Student; BAU = business-as-usual; IEP = individualized education program.

standard operating procedures for preparing for the transition component of any IEP meeting. The only activity that may not be part of standard procedures was the training of the technology tools to help students present. However, many districts now require students to present a portfolio their senior year, and the students' STeam presentations were often used as both a practice activity and a starting point for this larger portfolio presentation.

Implementation checklist. To ensure CIRCLES was implemented as designed, the district staff who attended all the STeam meetings within their district completed an implementation checklist. There were 26 checklist items and all items were developed based on the actions needed to implement CIRCLES. For example, the first item on the checklist was, *Identified potential agencies in postsecondary education, employment, and independent living.* The last item on the checklist was, *Goals identified at STeam meeting to be included on student's IEP.* Raters responded with yes (i.e., item was observed) or no (i.e., item was not observed) to all items. The percentages of yeses were reported for each STeam meeting.

All district staff were trained on using the checklist at the beginning of the school year. Project and district staff independently rated the first three STeam meetings of the academic year to examine agreement. Out of 36 observations in 12 districts, the interrater agreement was 100% between the two raters. The district staff were the only raters for the remaining STeam meetings. The average implementation score was above 96%. Overwhelmingly, schools implemented the intervention with high fidelity. This measure was not included in any of the analytic models, and results were only used to monitor implementation of CIRCLES.

BAU Condition

BAU schools continued their current model for transition planning. Our research team conducted interviews and found the following characteristics to be part of transition-planning processes in each of our BAU schools: (a) IEP teachers prepared students to attend their IEP meetings; (b) IEP teachers typically contacted vocational rehabilitation as the agency to invite to transition-planning meetings; (c) IEP teachers did not know what other agencies, if any, might be appropriate to invite, and had not had luck getting other agencies to the meetings and therefore, they rarely invited other agencies; and (d) vocational rehabilitation often was unable to attend most IEP meetings because of caseload and time commitments for IEPs (typically 2–3 hr).

Instruments and Data Collection

All data were collected once a year. Educator and student measures of self-determination were collected at the end of the academic year (April–June) using an online survey. IEP participation measures were collected immediately after the student's IEP meeting.

Self-determination measures. The American Institutes for Research (AIR), in collaboration with Teachers College, developed the educator (AIR-E) and student (AIR-S) versions of the *AIR Self-Determination Scale* (Wolman, Campeau, Dubois, Mithaug, & Stolarski, 1994). The functional model of AIR self-determination consists of two main components: Capacity and Opportunity. Capacity refers to the knowledge, abilities, and perceptions that allow students to be self-determined. Opportunity refers to a student's chances to use their knowledge and abilities in school and at home.

The AIR-E consists of 30 items that are rated using a 5-point Likert-type rating scale (1 = *never* to 5 = *always*). Six items correspond to five subscales: (a) Knowledge, (b) Ability, (c) Perception, (d) Opportunity at School, and (e) Opportunity at Home. The first three subscales are associated with the component of Capacity and the last two scales are associated with Opportunities. Previous research (Wolman et al., 1994) reported alternative-item consistency ranging from .91 to .98 and internal consistency coefficient of .95, and test–retest with 3 months between administration of .74. In this study, coefficient alphas for the Capacity and Opportunity scales were .97 and .94, respectively. Both Capacity and Opportunity scales were used in this study.

The AIR-S consists of 24 items, and like the AIR-E, consists of both the Capacity and Opportunity subscales. The Capacity subscale items relate to things students do related to self-determination and how the students feel about performing these self-determined behaviors. The Opportunity subscale consists of questions about the student's perceptions of their opportunities to perform self-determined behaviors at school and at home. The AIR-S was normed on 450 students with and without disabilities. Mithaug, Campeau, and Wolman (2003) reported adequate reliability and validity for the measure of Capacity and Opportunity. Factor analysis supported the two factor structure of the AIR-S. In a second-order confirmatory factor analysis, the two subscales were supported and contributed to higher-order self-determination construct. In this study, coefficient alphas for the Capacity and Opportunity scales were .91 and .90, respectively. Both Capacity and Opportunity scales were used in this study.

IEP participation. At the end of each IEP meeting, teachers were asked to rate the degree of student participation. Using a 5-point scale, teachers scored the student as *no participation* (1) to *full participation* (5). Descriptions of behaviors were provided to help raters score the students' participation level and all teachers were trained to use the instrument. The following student behaviors were rated: (1) no participation, for example, student did not participate at all in IEP meeting; (2) very little participation, for example, student stated name; (3) some participation, for example, student only responded to posed questions; (4) near full participation, for example, student discussed strengths, needs, or IEP goals; student did not ask questions; student answered some posed questions; or (5) full participation, for example, student discussed strengths, needs, goals; student asked questions; and student independently answered posed questions.

The IEP participation scale was developed by our research team and content validity evidence was examined by having the project advisory committee and special education teachers review the scale. Both groups reported the scale captured the full range of student participation levels during IEP meetings.

Data Analysis

Power analysis. Sample size in this study was based on a priori power analysis conducted using Optimal Design v. 2.0 software (Raudenbush et al., 2011). We designed this study to meet a threshold of at least power of .80. Two power analyses were conducted: one for school-level and one for student-level outcomes. For the school-level analyses, using a moderate effect size (d = .50) and alpha of .05, 48 schools met the .80 power threshold. For the student-level analyses, using 48 schools, a moderate effect size, intraclass correlation (ICC) of .10, and alpha of .05, at least 17 students were needed from each school. The moderate effect size was estimated based on a pilot study of CIRCLES (Aspel et al., 1999).

Analytic models. Given the multilevel structure of the data, with students nested within schools, multilevel modeling using posttest data collection was used to investigate the relationships among the variables of interest at the two levels. All multilevel analyses were examined using HLM 7.01. Data screening and testing of assumptions were conducted using SPSS. The following a priori hypotheses were examined in this study: H1: CIRCLES participants will have higher self-determination than participants in the BAU condition; and H2: CIRCLES participants will have higher IEP participation than participants in the BAU condition.

A means as outcome model was used to examine differences between the CIRLCES and BAU conditions. Before testing the treatment effects, an empty model was tested to determine the amount of the total variation in students' outcome accounted for at each of the two levels. The equations for the empty model were as follows:

$$\text{Level 1: Students } Y_{ij} = \beta_{0j} + r_{ij}, \text{ and}$$
$$\text{Level 2: School } \beta_{0j} = \gamma_{00} + u_{0j},$$

where β_{0j} is the grand mean for students in school j, γ_{00} is the grand mean across schools, u_{0j} is a random effect for school j, and r_{ij} is a random effect for student i in school j. Next the effect of the CIRCLES intervention (referred to as means as outcome model) was examined using the following model:

$$\text{Level 1: Students } Y_{ij} = \beta_{0j} + r_{ij}, \text{ and}$$
$$\text{Level 2: School } \beta_{0j} = \gamma_{00} + \gamma_{01} \times \text{CIRCLES} + u_{0j},$$

where CIRCLES participants were coded 1 and BAU condition was coded 0, and the CIRCLES was entered uncentered.

Additional analyses were conducted to examine the effects of student and school characteristics, as well as potential mediating and moderating effects. The effects of student-level disability classification (i.e., dummy coded with students with specific learning disabilities serving as the reference group) and grade level (i.e., 10th, 11th, or 12th grade), as well as the interaction between the student-level characteristics and intervention, were examined using a step-up strategy for identifying promising submodels (Raudenbush & Bryk, 2002). The same method was used to examine the effects of school-level variables, which included size of school and percentage of students who received FRL.

Maximum likelihood estimation was used in the estimation process. An average of 1.2% of the data for each variable was determined to be missing. Multiple imputation using expectation-maximization algorithm (Rubin, 1996) was implemented using SPSS to estimate the missing data points utilizing the full item pool for participants. Additional analyses were performed to ensure that the excluded cases were not systematically different from the cases used in the analyses, and we found no differences. There were no missing data for Level 2 cases. The hierarchical linear modeling (HLM) assumptions, including linear relationships between each predictor and the outcome variable, homogeneity of variance, and multivariate normality, were examined and results suggested that the assumptions were tenable. Because multiple tests are being conducted, adjustments to control for Type I error using the Benjamini and Hochberg (1995) procedure were used to determine statistical significance.

Results

A series of HLM analyses tested the differential effect of CIRCLES and BAU conditions. The sample size, means, and standard deviations for all outcome measures at both the student and school levels are reported in Table 2. For all outcome variables, the students and schools in the CIRCLES condition had higher means for measures of self-determination and participation in IEP meetings than the BAU condition. At the student level, the magnitude of differences were most notable for student and educator reports for Opportunity (Hedges's *g* .37 and .38, respectively) and IEP participation (Hedges's *g* of .77). At the school level, all effect sizes were large (Hedges's *g* of .80 to .99), except for student report of Capacity (Hedges's *g* equals .19).

HLM Results

Self-determination. The tests for effects of CIRCLES for the four measures of self-determination are reported in Table 3. First, a null model with no predictors (Model 1) was tested to determine initial variance components at each level. The ICC of .12 and .18 for the educators' rating of students' Capacity and Opportunity suggested the multilevel nature of the data and provided a rationale for testing additional models with predictors. The ICCs for the students' ratings of self-determination, .06 for Capacity and .08 for Opportunity, while smaller than the educators' ratings, allowed for some, albeit small, variance to be examined at the school level.

In Model 2, the intervention condition (0 = BAU and 1 = CIRCLES) was added at Level 2. There were statistically significant CIRCLES effects for educators' Capacity (γ_{01} = .23, *SE* = .07, $p < .01$, r^2 = 21%) and Opportunity (γ_{01} = .23, *SE* = .08, $p < .01$, r^2 = 18%). CIRCLES explained 21% and 18% of the between measures variance in educators' Capacity and Opportunity, respectively. These results indicate that educators reported higher levels of students' Capacity and Opportunity in the CIRCLES condition as compared with the BAU condition. For students' ratings, there were significant effects for Opportunity (γ_{01} = .19, *SE* = .08, $p < .01$, r^2 = 17%), but there were no CIRCLES effects for Capacity (γ_{01} = −.04, *SE* = .08, $p > .05$). The results indicate that students in the CIRCLES condition had higher on average levels of Opportunity, but there were no differences between the groups for the Capacity outcome.

Additional analyses examined disability category (i.e., autism, intellectual disabilities, other health impairments, and other disabilities), where students with specific learning disabilities were used as the baseline group for comparisons, and student grade levels were included as predictor variables in Level 1. Furthermore, interaction terms were created between the treatment variable and disability categories to examine potential moderating effects. FRL and size of school were added as predictor variables at Level 2. With very few exceptions almost all the Level 1 variables, interaction terms, and Level 2 variables were not statistically significant. For those terms that were statistically significant, educators reported a higher level of Capacity for students with specific learning disabilities than students with autism, intellectual disabilities, other health impairments and other disabilities ($p < .01$). There was one statistically significant interaction term ($p < .01$), students' report of Opportunity. Students with autism in the CIRCLES condition reported similar levels of Opportunity as students with specific learning disabilities, but in the BAU condition, students with autism reported a statistically significantly lower Opportunity means than students with specific learning disabilities. There were also no statistically significant findings for FRL and size of school at Level 2. Statistical results of these analyses are not reported due to space limitations.

IEP participation. The tests for effects of CIRCLES for the IEP participation level are reported in Table 3 (last columns). Results of the null model with no predictors (Model 1) suggested statistically significant differences between the schools on IEP participation and an ICC of .34. In Model 2, there were statistically significant CIRCLES effects for IEP participation (γ_{01} = .60, *SE* = .19, $p < .01$, r^2 = 22%). CIRCLES explained 22% of the between measures variance in IEP participation.

As with the self-determination measures, additional analyses suggested students' disability category and grade level did not have mediating or moderating effects on the IEP participation ($p > .05$). There were also no statistically significant findings for FRL and size of school.

Discussion

Results of this study suggest CIRCLES positively influences students' self-determination and participation in IEP

Table 3. Hierarchical Linear Modeling Results for Measures of Self-Determination and IEP Participation.

Model	Effects		Educator				Student					
			Capacity		Opportunity		Capacity		Opportunity		IEP	
			Estimation	*SE*	Estimation	*SE*	Estimation	*SE*	Estimation	*SE*	Estimation	*SE*
Model 1	Fixed	Intercept, γ_{00}	3.22	.05***	3.92	.05***	3.77	.04***	3.89	.04***	3.06	.12***
			SD	Variance	*SD*	Variance	*SD*	Variance	*SD*	Variance	*SD*	Variance
	Random	School, u_0	.28	.07***	.27	.07***	.17	.03***	.22	.05***	0.72	0.52***
		Student, *r*	.76	.58	.57	.32	.69	.47	.71	.51	1.01	1.01
		ICC		.12		.18		.06		.08		.34
			Estimation	*SE*	Estimation	*SE*	Estimation	*SE*	Estimation	*SE*	Estimation	*SE*
Model 2	Fixed	Intercept, γ_{00}	3.11	.07***	3.81	.07***	3.79	.06***	3.80	.06***	2.82	.14***
		CIRCLES, γ_{01}	**.23**	**.07****	**.23**	**.08****	**−.04**	**.08, *ns***	**.19**	**.08****	**.60**	**.19****
			SD	Variance	*SD*	Variance	*SD*	Variance	*SD*	Variance	*SD*	Variance
	Random	School, u_0	.26	.06***	.25	.06***	.18	.03***	.20	.04***	.53	.28***
		Student, *r*	.76	.58	.57	.32	.69	.47	.71	.51	.99	.97
		ICC		.09		.16		.06		.07		.23
		Effect size		.21		.18				.17		.22

Note. Bold indicates intervention effect. IEP = individualized education program; ICC = intraclass correlation; CIRCLES = Communicating Interagency Relationships and Collaborative Linkages for Exceptional Student; *ns* = not statistically significant.
**$p < .01$. ***$p < .001$.

meetings. Furthermore, students' disability status, students' grade level, school FRL status, and school size do not differentially affect or diminish the effects of CIRCLES.

Results of this study extend the literature in a variety of ways. First, in terms of level of student self-determination, they demonstrate that by participating in CIRCLES, teachers indicated significant differences on student self-determination Capacity and Opportunity outcomes and students indicated significant differences in Opportunity.

Previously, correlational research found differences between how teachers and students rated students labeled with emotional and behavioral disorders, learning disabilities, and mild/moderate cognitive disabilities (Carter, Trainer, Owens, Swedeen, & Sun, 2010). For example, Carter et al. (2010) found (a) teachers perceived students with learning disabilities to have a significantly greater capacity for self-determination than students with either emotional and behavioral disorders or cognitive disabilities, (b) teachers perceived all students to have frequent opportunity to exhibit self-determination skills at school, and (c) youth consistently evaluated their self-determination capacity more positively than their teachers.

The results of the current study both support and extend these findings. Teachers in the CIRCLES condition indicated all their students had both higher capacity and opportunity for self-determination than teachers in BAU schools. It appears CIRCLES may be a way to overcome disability label differences, possibly because teachers have the opportunity to see their students exhibit self-determination skills at the STeam and IEP meetings.

Next, Carter et al. (2010) found students consistently rated themselves higher than their teachers. While the present study did not compare teacher and student ratings, two findings are noteworthy: (a) students in CIRCLES indicated higher levels of opportunity for self-determination skills than students in BAU schools and (b) students with autism in CIRCLES reported similar levels of opportunity to students with specific learning disabilities while in BAU schools they indicated having lower levels of opportunity. Again, the opportunities provided by STeam and IEP meetings might explain these differences.

Second, the findings that CIRCLES led to higher levels of student participation in the IEP, extends the literature by adding another strategy for increasing these important skills. Prior research had identified specific curricula such as the *Self-Advocacy Strategy* (Van Reusen, Bos, Schumaker, & Deshler, 1994) and the *Self-Directed IEP* (Martin, Marshall, Maxson, & Jerman, 1996) as evidence-based practices for increasing student participation in their IEP meetings (Test, Fowler, et al., 2009). In addition, Test et al. (2004) found person-centered planning strategies had also been used to increase student involvement in the IEP process. Now, CIRCLES can be added as a way to increase both student levels of self-determination and their involvement in the IEP process. Together, these findings provide empirical support for Lee et al.'s (2012) idea about the reciprocal nature of student involvement on their planning and enhanced self-determination skills.

Third, these results extend the literature on the impact of interagency collaboration. While Test, Mazzotti, et al. (2009) identified interagency collaboration as a predictor of positive education and employment postschool outcomes, it appears the CIRCLES model of interagency collaboration may lead to increased student involvement in IEP meetings and levels of self-determination, both of which have also been associated with improved postschool outcomes. While previous interagency collaboration research has focused on state (Noonan, McCall, Zheng, & Gaumer Erickson, 2012) and community (Noonan, Gaumer Erickson, & Morningstar, 2013) level teams, CIRCLES extends this literature by combining a school team with a community team. Given the current findings, it appears the school team may be a key additional level of interagency collaboration for increasing student involvement in the IEP and levels of self-determination.

Limitations

The most important rationale underlying random assignment of schools into conditions is to avoid selection bias, and compliance is an essential condition for its realization (Ong-Dean, Hofstetter, & Srick, 2011). School settings are much more challenging than a typical clinical trial. While this study had initial support from all schools and administrators, four schools did not comply with the implementation of the intervention or the data collection timeline. Because of school staff turnover, procedures for obtaining informed consent, tracking students and collecting data were not done as designed. While it appears the schools were similar on all demographic measures, it is not certain whether there are unmeasured differences that could have influenced the results. Because all students enrolled in the schools did not agree to participate in this study, casual inferences about the effects of CIRCLES are limited.

Suggestions for Future Research

Future research is needed to investigate the effects of annual STeam meetings, beginning in the freshman year. These data may indicate the most effective "dosage" and/or during what high school year(s) STeam meeting(s) should be held for each student. Next, the present study took place in primarily urban and suburban high schools. Future research is needed to determine the impact of CIRCLES in rural school systems. CIRCLES may provide an excellent model for increasing access to the limited number of adult services available in many rural locations. Future research should also examine the effects of CIRCLES on postschool outcomes. Demonstrating

school practices that positively impact areas of employment and postsecondary education would provide valuable information for planning programs for students with disabilities. Finally, true experimental research designs should be used to determine what in-school transition factors directly, not correlationally, impact student postschool outcomes.

Implications for Practice

Research has indicated the need to increase the number of opportunities for students with disabilities to learn and practice self-determination skills (Carter, Lane, Pierson, & Glaeser, 2006). Findings from the current study indicate both teachers and students involved in CIRCLES indicated students had greater opportunity to practice and demonstrate self-determination skills than did students in BAU schools. In addition, students in CIRCLES schools were rated as being more involved in their IEP meetings. As a result, CIRCLES provides educators with a "two-for-one" strategy. By helping students prepare their presentation for the STeam meeting, presenting to the STeam, discussing adult services options with the STeam, and then using the same presentation at their IEP meeting, educators can provide multiple opportunities for students to learn and practice valuable self-determination skills. For students whose IEP goals, objectives, and transition services indicate the need for increased self-determination skills and linkages to adult services, CIRCLES is recommended.

Authors' Note

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