Abstract Title Page

Title:
Development and Evaluation of a Curriculum to Improve Educational and Career Outcomes for High School Girls with Disabilities

Authors and Affiliations:
Bonnie Doren, Ph.D, University of Oregon
Allison Lombardi, Ph.D, University of Oregon
Lauren Lindstrom, Ph.D, University of Oregon
Jeff Gau, Oregon Research Institute

Abstract Body

Background / Context:

Despite the national focus on improving transition services and post-school outcomes, many young women with disabilities still face significant barriers in obtaining meaningful employment and pursuing postsecondary education or training (Doren & Benz, 2001; Marder, Cardos, & Wagner, 2005). Although recent reports indicate that the gender gap in employment rates may be diminishing (Newman, Wagner, Cameto, & Knokey, 2009), in this same report, the authors found that young women with disabilities had lower participation in higher skilled jobs and worked fewer hours than their male counterparts. Several other recent studies have reported gender difference on important indicators of employment including, females with disabilities exhibiting lower employment rates, lower earnings, lower participation in full-time work, and a greater percentage supporting themselves on an annual income of less than $5,000 compared with their male peers (Baer et al., 2003; Boeltzig, Timmons, & Butterworth, 2009; Wagner, Newman, Cameto, Garza, & Levine, 2005). Gender differences on important post-school outcomes can be traced to the multiple barriers faced by young women with disabilities in the career development process, including gender role limitations , low family and teacher expectations, and disability stereotypes in high school and the workplace (Asch, Rousso, & Jefferies, 2001; Noonan et al., 2004). Studies indicate women more frequently display lower expectations to enter and succeed in a wide range of occupations, restrict their range of occupations at an early age, and adjust both their educational and occupational expectations downward over time. As a result, young women often avoid choosing or considering high-prestige or nontraditional occupations (Bandura, Barbarabelli, Caprara, & Pastorelli, 2001; Gottfredson, 2005; Rojeweski, 2005). Young women with disabilities are particularly vulnerable to this lack of self-confidence and this has been linked to lower rates of engagement in the workforce (Doren & Benz; 1998). In addition, young women with disabilities are less likely than their nondisabled male peers to participate in school- or community-based employment experiences in high school further limiting their exposure to career options and post-school support networks (Asch et al., 2001). The combination of gender and disability barriers creates a double-jeopardy situation for young women with disabilities who are preparing to enter adult roles (Doren & Benz, 2001; Trainor, 2007).

To more effectively address these barriers, young women with disabilities need opportunities to expand their knowledge and skills and explore a range of career options while they are still in high school (Lindstrom, Benz, & Doren, 2004; National Organization on Disabilities, 2008). The PATHS (Post-school Achievement through Higher Skills) curriculum was grounded in previous research and literature on critical knowledge, skills, attitudes, and experiences required for young women with disabilities to succeed in adult roles.

Purpose / Objective / Research Question / Focus of Study:

The PATHS curriculum intervention was developed and tested to improve the career and educational outcomes of girls with disabilities in high school settings. A pilot test was conducted to understand the association between receiving the intervention and several outcomes related to self-determination, gender and disability awareness, and career and college preparation.

Setting:

The pilot test of the PATHs curriculum occurred in seven high school classrooms across six schools in one county during the 2010-11 academic year.

Population / Participants / Subjects:

High school girls (110) were selected to either participate in the curriculum (intervention) or receive typical transition services (control). Girls with disabilities (76%) and girls at risk for failure (24%) were included in the study. The average number of girls per class was approximately 10. The intervention group was largely white (85%), with a primary disability of learning disability (64%) and in grades 9 through 12. All teachers were female. Average years teaching was 9.61 (SD=4.61).

Intervention / Program / Practice:

The PATHS curriculum was incorporated as a girls-only stand-alone class for credit within each school. The curriculum contained 75 lessons across four modules in self-awareness, gender role awareness, disability awareness and career and college preparation. The curriculum was developed to be completed daily in 50 minute lessons across a semester.

Research Design:

The pilot study was conducted using a pre-post control group design to test the promise of the curriculum to increase critical knowledge and skills linked to important transition and career outcomes. The current proposal presents findings to date. The final presentation will contain additional findings, including academic achievement outcomes extracted from transcript records, and the degree to which achievement, demographic characteristics, and fidelity measures may moderate results.

Data Collection and Analysis:

A pre-post student survey was developed based on a compilation of validated measures relevant to the four curriculum modules.

Self-Awareness and Support. Two subscales were selected from the Arc's Self-Determination scale (Wehmeyer & Kelchner, 1995). The Autonomy subscale measures the frequency of which adolescents perform independent tasks related to adult life (e.g., "I work to earn money"). The response scale ranged from 1 (*not when I have the chance*) to 4 (*every time I have the chance*). The Self-Realization subscale measures self-awareness and self-acceptance (e.g., "I know how to make up for my limitations"). The response scale ranged from 1 (*never agree*) to 4 (*always agree*). Subscales from the Student Engagement Inventory (SEI; Appleton, Christenson, Kim, & Reschly, 2006) were selected to measure perceptions of peer support (e.g., "other students at school care about me") and aspirations (e.g., "I am hopeful about my future"). The response scale ranged from 1 (*strongly disagree*) to 4 (*strongly agree*). A Teacher Support Scale (TSS; Metheny, McWhirter, & O'Neil, 2008) was administered to the intervention group only and measures the perceptions of support from the PATHS teacher (e.g., "helps me understand my strengths"). The response scale ranged from 1 (*strongly disagree*) to 5 (*strongly agree*).

Career Preparation. The Vocational Skills Self-Efficacy scale (McWhirter, Rasheed, & Crothers, 2000), measures confidence in completing tasks related to job preparation skills (e.g., "complete a job application correctly"), time management (e.g., "make a plan for how to spend my time next week"), goal-setting (e.g., "set and achieve short and long-term goals"), and budgeting awareness (e.g., "make a monthly budget for myself that would include bills, spending money for food, clothing, and entertainment"). The response scale ranged from 1 (*no confidence*

at all) to 5 (*complete confidence*). The Career Outcome Expectancy scale (McWhirter, Rasheed, & Crothers, 2000) measures adolescents' level of agreement with career expectations, satisfaction, and feelings about the future (e.g., "I will be successful in my chosen career"). The response scale ranged from 1 (*strongly disagree*) to 4 (*strongly agree*).

College Preparation. The Social Efficacy subscale is from the College Self-Efficacy Inventory (CSEI; Solberg, O'Brien, Villareal, Kennel, & Davis, 1993), which measures level of confidence in performing various tasks associated with college student success (e.g., "participate in class discussions"). The response scale ranged from 1 (*not at all confident*) to 6 (*extremely confident*). The self-advocacy subscale is from the College Students with Disabilities Campus Climate (CSDCC) survey (Lombardi, Gerdes, & Murray, 2011), and measures individual actions related to disability advocacy in postsecondary environments (e.g., "I know my rights and responsibilities as a student with a disability"). The response scale ranged from 1 (*strongly disagree*) to 6 (*strongly agree*). Because these subscales are intended for college students, we made two minor adjustments: in all items we replaced (a) the word "professor" with "teacher", and (b) the word "university" with "school".

Gender and Disability Awareness. We developed a curriculum-based measure with items that were mapped to the curriculum content in gender and disability awareness and measured students' level of confidence with these topics. The response scale ranged from 1(*no confidence at all*) *to* 5 (*complete confidence).*

In addition, demographic data and daily attendance in the curriculum were collected. For students in the intervention group, a dosage score was calculated based on daily attendance in the PATHS class. Dosage was calculated by the total number of lessons a student was present for divided by the total number of lessons taught in her classroom.

Results:

Of the 110 participants who completed a pretest survey, 96 (87%) completed a posttest survey. Participants who completed both assessments were compared to those that completed pretest only on study intervention condition and all baseline measures of study outcomes. No significant differences were found (at $p < .05$) indicating the missing at random assumption remained tenable. Therefore, missing data were treated with imputation using the expectation/maximization (EM) algorithm (Dempster, Laird, & Rubin, 1977). Reliability of student survey constructs was assessed with coefficient alpha. The values ranged from .78 to .96. Table 1 shows alpha values by survey scale and pre and posttest descriptive statistics by intervention ($n = 72$) and control group ($n = 39$) (please insert Table 1 here).

Using a hierarchical linear modeling (HLM) approach, we examined the effects of the intervention by modeling students at level-1 ($n = 111$) and classrooms at level-2 ($n = 13$). In total, 8 multilevel models were estimated using the survey change scores (computed as posttest-pretest) as outcomes.

First, we computed the intraclass correlation (ICC) for each model. The ICCs ranged from 0.0% to 5.8%. The Curriculum-based measure showed the largest ICC, where 5.8% of the variation was attributable to the classroom. Other notable ICCs were for Engagement (5.4%), Vocational Self-efficacy (3.2%), Career Outcome Expectancy (2.9%), and Self-Advocacy (1.9%); however, none of these findings showed that significant variation was attributed to the PATHS classroom, suggesting the intervention was delivered consistently across settings.

Next, we examined the main effects of the intervention. The HLM results for the full sample are presented in Table 2 (please insert Table 2 here). According to the unadjusted *p*-

values, students who received the intervention showed significant improvement after the PATHS class in Autonomy and on the Curriculum-based measure, whereas students who did not take the PATHS class did not show improvement in these areas. However, adjusted p-values, computed with the Benjamin-Hochberg step-up false discovery rate procedure, showed no significant changes on all scales. Because multilevel models do not provide standardized regression coefficients, partial correlation coefficients, computed on the basis of *t* values and degrees of freedom (Rosenthal & Rubin, 2003) are provided as an estimate of effect size. Using effect size, scales that showed a large effect for students in the intervention group after taking the PATHS class were Autonomy (pr = .55) and the Curriculum-based measure (pr = .68); scales that showed a medium effect were Social Efficacy (pr = .35), Career Outcome Expectancy (pr = .33), and Engagement (pr = .48). Based on the unadjusted p-values and associated effect sizes it is clear the current study is underpowered.

In addition, we examined the main effects of the intervention with a complier sample. Using the median value of the dosage score, we extracted only those students who received 68% or higher dosage of the PATHS curriculum that occurred within their school, which resulted in a reduced sample of intervention students. Therefore, the complier sample included students in the intervention and control groups at level-1 (n = 77) and the classrooms at level-2 (n = 12). The HLM results for the complier sample are presented in Table 3 (please insert Table 3 here). Within the complier sample, students who received the PATHS intervention showed significant improvement in Vocational Self Efficacy and the Curriculum-based measure. Adjusted *p*-values showed no significant changes on the scales, although notable effect sizes resulted for some scales, including a large effect for Vocational Self Efficacy (pr = .60), Self Advocacy (pr = .51), and the Curriculum-based measure (pr = .77), and a medium effect for Autonomy (pr = .47), Career Outcome Expectancy (pr = .45), and Engagement (pr = .32).

At the time of the SREE poster submission, we will have completed moderator analyses including the extent to which fidelity, demographic and academic variables may modify the outcomes of the curriculum.

Conclusions:

The available results from the pilot study suggest that the PATHS curriculum has the potential to positively impact girls with disabilities and those at risk in the areas of career and vocational efficacy, self advocacy, engagement in school, and disability and gender awareness. Students who participated in the PATHS class gained knowledge and skills in these areas, whereas their control group peers did not. Further, examination of the ICCs show the intervention was delivered consistently across classrooms, suggesting the curriculum has the potential to be delivered by various teachers and generalized across high schools. Finally, students who received over half of the intervention, as measured by a dosage score, showed more positive and greater gains on study measures than those that those who received less. The PATHS curriculum certainly requires further and expanded research to better understand the effectiveness of the curriculum in a wider variety of settings using randomized-control trials, however, the initial development and pilot study show promise that the curriculum may be a viable resource for special educators and transition specialists to consider in developing career and postsecondary readiness and preparation for female students with disabilities or at risk of failure.

Appendices

Appendix A. References

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Appendix B. Tables and Figures

Table 1

Pre and Post Test Descriptive Statistics by Intervention and Control Groups

		Pretest		Posttest	
	α	Mean	SD	Mean	SD
Vocational self-efficacy	.94				
Intervention		3.38	0.69	3.43	1.67
Control		3.65	0.62	3.43	0.74
Social efficacy	.86				
Intervention		3.90	1.28	4.41	2.15
Control		4.08	0.92	4.17	1.23
Autonomy	.81				
Intervention		2.64	0.54	2.76	0.64
Control		2.81	0.43	2.71	0.44
Self-realization	.78				
Intervention		2.86	0.44	3.73	5.94
Control		2.97	0.44	3.12	1.70
Career outcome expectancy	.88				
Intervention		3.24	0.52	3.66	2.63
Control		3.31	0.57	3.18	0.74
Engagement	.90				
Intervention		3.25	0.47	3.30	0.42
Control		3.43	0.42	3.30	0.47
Self-advocacy	.88				
Intervention		4.23	0.96	4.21	1.59
Control		4.30	0.97	4.15	0.97
Curriculum-based measure	.91				
Intervention		3.09	0.88	3.62	0.97
Control		3.22	0.84	3.06	1.19
PATHS Teacher	.96				
Intervention		4.24	0.66	4.69	2.36

Table 2

Main Effects of Intervention- Full Sample

	Intervention Effect (γ_{01})					
	Coeff.	*SE*	*t*-value	*p*-value	Adjusted p-value	pr
Social Efficacy	0.422	0.336	1.258	0.235	.418	.35
Vocational Self Efficacy	0.272	0.328	0.829	0.425	.567	.24
Autonomy	0.214	0.097	2.212*	0.049	.196	.55
Career Outcome	0.532	0.460	1.156	0.273	.437	.33
Expectancy						
Engagement	0.167	0.092	1.805	0.098	.261	.48
Self-Advocacy	0.151	0.345	0.440	0.668	.763	.13
Self-Realization	0.715	0.995	0.719	0.487	.599	.21
Curriculum-based measure	0.685	0.225	3.046*	0.012	.096	.68

Coeff. = coefficient, SE = standard error, pr = partial regression coefficient.
Notes. All tests based on 11 degrees of freedom. Adjusted p-values computed with the Benjamin-Hochberg step-up false discovery rate procedure. Partial regression coefficients computed on the basis of t-values and degrees of freedom (Rothenthal & Rubin, 2003).

Table 3

Main Effects of Intervention- Complier Sample

	Intervention Effect (γ_{01})					
	Coeff.	*SE*	*t*-value	*p*-value	Adjusted p-value	pr
Social Efficacy	-0.031	0.304	-0.105	0.919	.919	.03
Vocational Self Efficacy	0.354	0.151	2.344*	0.041	.219	.60
Autonomy	0.154	0.092	1.678	0.124	.283	.47
Career Outcome Expectancy	0.243	0.151	1.604	0.140	.280	.45
Engagement	0.138	0.129	1.069	0.311	.452	.32
Self-Advocacy	0.370	0.200	1.851	0.093	.298	.51
Self-Realization	-0.068	0.301	-0.228	0.824	.879	.07
Curriculum-based measure	0.858	0.226	3.790*	0.004	.064	.77

Coeff. = coefficient, SE = standard error, pr = partial regression coefficient.
Notes. All tests based on 10 degrees of freedom. Adjusted p-values computed with the Benjamin-Hochberg step-up false discovery rate procedure.