Journal of Research in Special Educational Needs · Volume •• · Number •• · 2016 ••–••
doi: 10.1111/1471-3802.12363

FACTORS THAT EXPLAIN PLACEMENT DECISIONS FOR STUDENTS WITH MULTIPLE DISABILITIES: FINDINGS FROM NATIONAL DATA

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Key words: multiple disabilities, placement, inclusion, elementary students, large-scale data set.

The Special Education Elementary Longitudinal Study data set was utilised to examine the potential influences on placement decisions for students with multiple disabilities in the US. The sample consisted of 415 students. Specifically, the study investigated whether factors including students prior special education experiences, parental involvement, parental expectations and educational risk factors explain the placement of students in classrooms. Results indicate significant relations between the explanatory variables and the hours spent daily in general education classrooms. However, only two variables, parents education and receipt of early childhood special education services, were significantly associated with the dichotomised outcome of whether or not a child received any academic instruction in a general education classroom. Research limitations and implications for future research, policy and practice in the international context are discussed.

A number of designations and disability definitions for persons with multiple disabilities can be found in national laws (Children and Families Act, 2014; IDEA, 2004), literature (Bellamy, Croot, Bush, et al., 2010; Nakken and Vlaskamp, 2007) and support organisations ('IASSIDD' 2015; 'PLMD Network' 2015). Legislation in the US has defined multiple disabilities as the presence of concomitant impairments whose combination can negatively and severely impact a child's learning and educational experiences (IDEA, 2004). The IDEA (2004) definition will be used to describe this study.

Providing students with multiple disabilities a free and appropriate public education in the least restrictive environment has been an ongoing challenge (Jackson, Ryndak and Wehmeyer, 2008/2009; Kurth, Morningstar and Kozleski, 2014). For example, although The Children and Families Act (2014) in the UK explicitly state, '(Local authorities) must ensure fair access to all schools for every child' (Secretary of State for Education, 2013, p. 13), this act has evoked mixed responses to the concept of full inclusion of children with disabilities in general education classes (Hornby, 2014; Pearson, Mitchell and Rapti, 2015). While the issues surrounding the Act are multi-faceted, a major point of contention has emerged around the placement of children in separate special schools (Norwich, 2014). Contrasting positions emerged on whether to continue to place students with severe and more profound disabilities in inclusive mainstream schools or in separate special schools (Hornby, 2014).

Nevertheless, supported by research with students who have multiple and severe disabilities (Downing, Spencer and Cavallaro, 2004; Fisher and Meyer, 2002; Foreman, Arthur-Kelly, Pascoe, et al., 2004) and their peers (Carter, Hughes, Guth, et al., 2005; Cole, Waldron and Majd, 2004), it is argued by many that students with multiple and severe disabilities should be routinely included in general education settings (Turnbull, Turnbull and Wehmeyer, 2006). Hence, the discussions in recent years have evolved from 'why inclusion' to issues related to 'how inclusion' can be effectively implemented (Loreman, 2007; Ryndak, Jackson and White, 2013). And yet, while some progress has been reported (McLeskey, Landers, Williamson, et al., 2010), students with multiple disabilities are still less likely to be placed in general education settings, in contrast to students representing other disability categories (Smith, 2007) and in the UK may be required to be educated separately in a special school (Norwich, 2014). Moreover, even when served for periods of the day in general education, students' access to academic content has been inconsistent and appropriateness of general education placement has been questioned (Matzen, Ryndak and Nakao, 2010; Ryndak, Jackson, and White, 2013). Below, we discuss the several factors that may affect inclusive placement identified in current literature.

Parental involvement

Parental involvement is a complex construct that has been broadly defined as 'parental participation in the educational processes and experiences of their children'

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(Jeynes, 2007, p. 83). The Children and Families Act (2014) and IDEA (2004) mandate that parents (i.e., 'primary caregivers') provide permission for schools to evaluate their children. IDEA (2004) also requires that parents be invited to participate in their child's Individual Education Program (IEP) meetings. Beyond these stipulations, further interactions between home and school may be quite informal.

While there is evidence that parents of children with multiple disabilities may favour inclusive services (Downing and Peckham-Hardin, 2007), the actual effect of parental involvement on placement in general education has not been adequately researched. The extant research on parental involvement, most of which was conducted with typical students and their families, indicates that levels of parental involvement can play a critical role in improving positive educational outcomes for children, particularly parents' participation at home and their involvement in IEP meetings (Fan and Chen, 2001; Jeynes, 2005, 2007; LaRocque, Kleiman and Darling, 2011; Newman, Cameto and Hernandez, 2006; Patall, Cooper and Robinson, 2008; Zhang, Hsu, Kwok, et al., 2011). Although a close parent–school partnership is an aspiration of policy in both the UK and the US, in reality, parents' attendance and participation in decision-making meetings varies considerably. For example, the Los Angeles Unified School District conducted a large-scale survey and found that parents of children with low-incidence disabilities were more involved than parents of children with high-incidence disabilities (Newman, Cameto, and Hernandez, 2006). These parents were also more likely to both attend IEP meetings and to be more active in special education service delivery. Furthermore, as parental expectations are communicated to children through supporting positive homework behaviours and reinforcing self-regulation skills, academic achievement may improve (Hoover-Dempsey, Battiato, Walker, et al., 2001; Patall, Cooper, and Robinson, 2008).

Parental expectations

Parents' aspirations and expectations for their children exert a positive influence on children's educational achievement (Fan and Chen, 2001; Jeynes, 2005) and on post-school outcomes for youth with disabilities (Doren, Gau and Lindstrom, 2012). As with parental involvement, parental expectations have a demonstrated relationship with how children respond to their school experiences; yet, less is known about how parents' expectations might affect the educational services that are provided by schools to their children.

Educational risk factors

Research has clearly demonstrated a correlation between educational risk factors and a propensity for overrepresentation in special education (Morrier and Gallagher, 2010a, b; Shifrer, Muller and Callahan, 2010; Sullivan, 2011). Educational risk factors can include a student being a member of a language minority population, being from a family with low socioeconomic status (SES), and being from a family with parents who have low educational levels (Shifrer, Muller, and Callahan, 2010). A variety of terms have been used to define the population of language minority (LM) learners resulting in inconsistency for designating the LM population affects identification and reporting procedures (Samson and Lesaux, 2008). Students who may be considered LM are members of one of the fastest growing student populations in the US. Yet, next to nothing is known about how being a member of a language minority may play out when decisions about general education placement are made for students with multiple disabilities.

Similarly, few studies have been conducted that examine the influence of socioeconomic status (SES) on the degree of inclusion for students with disabilities in general education classrooms. Rather, the focus of most studies that include SES as a variable have examined the disproportionate representation of students with disabilities in the special education service system (Hosp and Reschly, 2003; Hosp and Reschly, 2004; Shifrer, Muller, and Callahan, 2010). A recent study in Poland found SES positively associated with student placement in inclusive elementary schools (Szumski and Karwoski, 2012). As parents' SES increased so did the likelihood of their child's attending an inclusive school. Another study conducted with a sample of 129 New York school districts looked at the relationship between degree of inclusion and economic variables (Cosier and Causton-Theoharis, 2011). Poverty level which consisted of the percentage of students receiving free and reduced lunch and median family income was used as the SES variable. A negative correlation was found between students' being highly included in general education classes and the poverty variable. These studies begin to illuminate the potential for SES to explain the placement of students with disabilities in general education settings.

Furthermore, parental education may play a role in levels of parents' involvement with their children's schooling. For example, research has shown lower levels of parental involvement are associated with lower levels of parental education (Kohl et al., 2000). Lower levels of parental involvement due to educational levels may also be a result of parents' feeling inadequately prepared to support their child's education (LaRocque, Kleiman, and Darling, 2011). If we posit that parents' involvement and/or parents' expectations explain placement decisions, then one could also suppose that parents' education levels could also indirectly explain placement decisions, such that children with multiple disabilities whose parents have higher educational levels could experience higher levels of general education placement.

Previous EI/ECSE services

There is a preponderance of data supporting short-term and long-term positive outcomes of early intervention/early childhood special education (EI/ECSE) services for

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young children with disabilities and their families (Bruder, 2010; Guralnick, 2011). However, there is no known study conducted to investigate the long-term placement outcomes for students with disabilities who have received EI/ECSE services; that is, if children receive EI/ECSE services, are they more likely or less likely to spend great time in general education classrooms?

Given the gaps in the literature delineated above, the current study was conducted to examine potential influences on placement decisions for students with multiple disabilities in elementary schools using a nationally representative sample of students. Particularly for students with multiple disabilities, no large-scale sample has previously been used to provide insight on the variables that might influence the amount of time students spend in general education settings and the content on which they receive instruction while in these general education settings. Specifically, this study investigated the extent to which each of the six theoretically relevant variables discussed above explained placement of students with multiple disabilities in general education classroom.

Method

SEELS data set

Overall sample and design. Data for this study came from the Special Education Elementary Longitudinal Study (SEELS), funded by the Office of Special Education Programs, U.S. Department of Education. The study includes information from a nationally representative sample of more than 11,000 students with disabilities who were of ages 6 through 12 when the study began. Over the course of three waves of data collection (2000–2001, 2002, and 2004), SEELS employed multiple data collection methods (e.g., parent interviews, teacher interviews, programme surveys and direct assessments) from multiple sources (e.g., parents, teachers, administrators and students) on a range of student characteristics, experiences, services, and outcomes to provide extensive, nationally representative, longitudinal data on students with disabilities who are served under at least one of the 12 federally defined disability categories in the US.

The SEELS study utilised a complex stratified sampling design with local educational agency (LEA) as the primary sampling unit and the students as the secondary sampling unit. One thousand one hundred and twenty-four LEAs were randomly selected from a national sample of 14,000 based on region, student enrolment and community wealth. Two hundred and forty-five LEAs and 30 state-supported special schools participated in the final study. Students were randomly selected from these participating LEAs and special schools. For more information on the study design please see Wagner, Kutash, Duchnowski, et al. (2005).

Participants in the current study

Participants in this study consisted of 415 students (i.e., 8.4% of the total SEELS participants) selected from Wave 1 of the SEELS database who were identified under the multiple disabilities (MD) category by their school or programme. Their ages ranged from 6 to 13 (M = 9.7, SD = 1.8) years in 2000–2001. One hundred and forty-two (40.3%) students received instruction in general education classroom for at least one academic subject (language arts, math, science, or social studies). Additionally, students spent an average of 3.55 hours per day (SD = 2.6) in general education classrooms and 2.06 hours, 0.64 hours, and 0.05 hours per day (SD = 2.70, 1.23, and 0.39) in special education self-contained classrooms, special education resource rooms and individual/home bound settings respectively. Over 86% of students (n = 324) identified as having a multiple disability had received special education services prior to age six. Table 1 presents an overview of select demographics of the students and their families in the sample. Table 2 summarises teacher and programme characteristics of the sample.

Measures used in the current study

For this study, we used data from Wave 1, parent interview and the students' school programme survey, gathered during 2000–2001. The variables used in this study and their sources are summarised in Table 3.

Table 1: Demographic characteristics of the students and families in the sample

	Frequency	Per cent
Student's ethnicity		
White	274	66.2
African American	89	21.5
Hispanic	42	10.1
Other	9	2.1
Students' gender: Female	171	41.2
Students' household income		
$25,000 or under	131	33.6
$25001- $50,000	123	31.5
over 50,000	136	34.9
Students' urbancity		
Rural	10	2.4
Suburban	255	61.4
Urban	150	36.1
Child received special education services prior to age 6: Yes	324	86.2
Parents' Education		
Less than High School	57	15.1
High School Graduate/GED	136	36.0
Some College	96	25.4
BA/BS or higher degree	89	23.5
Language other than English spoken at home	64	15.5

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Table 2: Teacher and programme characteristics

	Frequency/ Mean	Per cent/ SD
Type of school		
Public school	404	97.6
Private school	10	2.4
Placement options available for children with disabilities in the school:		
General education programme with special education services	232	91.3
Part-time resource room	246	96.9
Self-contained special education classroom	228	89.8
Class co-taught by general education and special education teacher	134	52.8
Individual/home-based instruction	104	40.9
Supports options available to general education teachers		
Consultation by special education staff	244	96.8
Special materials to use with students with special needs	215	85.3
In service training	194	77.0
Teacher aides/instructional assistants	227	90.1
Smaller student load or class size	88	34.9
Team teaching with special education teacher	155	61.5
None of these	133	32.0
Placement of participants		
Received instruction in general education classroom for at least one academic subject	142	40.3
Hours/day a student spends in general education classroom	3.55*	2.6**
Hours/day a student spends in special education self-contained classroom	2.06*	2.70**
Hours/day a student spends in special education resource room	0.64*	1.23**
Hours/day a student spends in individual or home bound	0.05*	0.39**

Note: *Mean. **Standard Deviation.

Dependent variable: placement

We extracted two placement variables as our dependent variables from the students' school programme survey in SEELS data to represent the different possible ways that placement has been defined in the literature. The survey was conducted with school staff most knowledgeable about the participating student's programme to gain information about the student's overall school programme and experiences and performance in specific classes. In the original SEELS data collection activities, programme staff was asked to identify the settings in which the student received instruction for the academic content area (i.e., language arts and other academic subjects such as mathematics, social studies and science). The settings include general education classroom, resource room, special education self-contained classroom, and individual instruction, homebound or other instruction. For this study, a variable was created if the student received instruction for at least one academic subject in a general education classroom (yes = 1, no = 0).

The second item asked school staff the number of hours per day the student spent in general education setting. This variable was measured as a continuous variable with values ranging from 0, for students spending no time in a general education setting, to 7.87, for students spending almost the entire school day in a general education classroom. Forty per cent students with multiple disabilities participating in this study received instruction in general education classroom in at least one academic subject (compared to 70% students in the overall SEELS data set). Furthermore, on average students with multiple disabilities spent most of their school time (3.5 hours approximately per day) in the general education classroom.

Explanatory variables

To identify factors associated with placement, we drew upon the literature reviewed earlier, the conceptual framework and previous data reports from the SEELS study to extract theoretically relevant items from the Wave 1 of the SEELS data set that were determined in previous research to be potentially related to placement of students. Selected items were grouped into three conceptual categories for analysis purposes: (1) student characteristics, (2) family/household characteristics and (3) school characteristics.

Student characteristics. Only students who received a primary category of multiple disabilities were included in this study. 'Age' reported in the SEELS data set was also used and included to understand its influence on placement of students with multiple disabilities. Students ranged from ages 6 through 14 in the current study (M = 9.71, SD = 1.84). Additionally, another variable, prior special education services was extracted from the parent survey.

Family/household characteristics. Three theoretically relevant variables were included in this study to examine the potential role of parental involvement in students' placement in general education classrooms: parental involvement, parental expectations and educational risk indicators. For the current study, parental involvement included whether parents (1) attended an IEP meeting in the past two school years (yes = 1, no = 0), (2) asked their child about school (yes = 1, no = 0), (3) helped their child with homework (yes = 1, no = 0), and (4) volunteered at their child's school in the past 1 year (yes = 1, no = 0). The last three items were aggregated

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Table 3: Variables used in the study and their source

	Variable	Variable Description	Source
Dependent Variables	Placement:		
	Receives academic education in Gen ed.	Student received academic content in general education classroom	School Programme Survey
	Hours/day in a setting	# Of hours/day the student spends in Gen Ed classroom	School Programme Survey
Independent Variables	Parental Involvement	Parent attended IEP in the past two school years	Parent Survey
		Parent asked child about school, helped with homework, volunteered at school	Parent Survey
	Parental Expectation	Expectations of respondent that the child will live alone with/without support; Expectations of respondent that child will graduate from high school; Expectations of respondent that child will get a paid job	Parent Survey
	High risk group	Income is less than $25,000; Language other than English frequently spoken at home; Parent's education is High School and below	Parent Survey
	Previous ECSE services	Child received special education services prior to 6 years of age	Parent Survey
	Age of the child		Parent Survey

to create an overall parental involvement variable indicating whether or not a parent had engaged in their child's school work at home or at school. Attendance of the respondent in their child's IEP meeting was a separate, dichotomously scored variable (yes = 1, no = 0). The definition of parental expectations for the current study included dichotomously coded variables indicating whether or not parents expected their children would graduate from high school (definitely or probably yes = 1, definitely or probably not = 0), live on their own or with assistance (definitely or probably yes = 1, definitely or probably not = 0) and obtain a paid job (definitely or probably yes = 1, definitely or probably not = 0).

Three socioeconomic disadvantage indicators (household income, parents' education and primary language spoken at home) that are consistently identified in the literature as being high education risk factors were included in the model to explain placement of students with multiple disabilities. If a language other than English was regularly spoken at home (scored dichotomously), it was considered a risk factor. Parents' education was measured as a nominal variable with four levels: less than a high school diploma/GED, attainment of high school diploma/GED, some college and college degree. Household income was also measured categorically with three levels of annual income: $25,000 or less; between $25,001 to $50,000 and over $50,000.

Data analysis

Prior to conducting analyses to answer the research questions, descriptive statistics and frequency distributions were examined to describe the sample and examine the distributional characteristics of the data. To appropriately account for the stratified sampling design, resulting in proportional overrepresentation and underrepresentation of specific subgroups, we used normalised weights in all analyses. Normalised sampling weights, obtained in the current study by dividing the raw parent weight by the mean weight, were applied in order to preserve the appropriate sample size (Hahs-Vaughn, 2005).

Ordinary least squares (OLS) and logistic regression analyses were conducted using SAS (version 9.3), USA Proc Surveyreg and Proc Surveylogistic, respectively, to answer the five research questions. These two procedures accommodate complex sampling designs and produce correct standard error estimates in the presence of cluster sampling. For both the OLS and logistic regression, all explanatory variables were entered into the models simultaneously. Diagnostics suggested relevant regression assumptions were tenable, with the exception of normally distributed residuals for the OLS regression. Both the observed and residual distributions of time spent in a general education setting were somewhat positively skewed, indicating relatively more students spending less time in general education. However, given the large sample size (n = 288 and n = 262) for the OLS and logistic regression analyses, respectively, and general robustness of the F test to non-normality, we proceeded with the regression analyses. Inferential statistical tests were evaluated at $\alpha = 0.01$ to minimise risk of type 1 error.

Results

Results of the OLS regression indicated that the variables representing parental involvement, parental expectation, social disadvantages, receipt of early special education services and age of the child collectively explained 17% ($R^2 = 0.17$) of the variance in hours spent daily in a

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general education classroom by students with multiple disabilities. All explanatory variables were statistically significant ($P < 0.01$) with the exception of parents' expectations that their child would either graduate from high school or obtain a paid job. Table 4 includes unstandardised regression coefficients for all explanatory variables in the OLS regression model.

The binary logistic regression with the dichotomised outcome of whether or not a child received any academic instruction in a general education classroom found only 2 of the 10 explanatory variables to be statistically significant ($P < 0.01$), that is, parents' education and receipt of special education services before 6 years of age. Table 5 presents adjusted odds ratios and confidence intervals from the binary logistic regression for all variables in the model.

Table 4: Unstandardised regression coefficients for the simultaneous entry multiple regression of number of minutes spent daily in general education

Factors	B[a]	Standard Error	P
IEP Meeting Attendance			
Yes	1.33	0.096	<0.0001*
No	Reference		
Parents' Involvement			
Yes	0.28	0.043	<0.0001*
No	Reference		
Child Expected to Live Independently			
Yes	0.82	0.067	<0.0001*
No	Reference		
Child Expected to Graduate from High School			
Yes	0.08	0.036	0.024
No	Reference		
Child Expected to Get a Paid Job			
Yes	0.01	0.047	0.895
No	Reference		
Household Income			
Over $50,000	0.12	0.075	0.110
$25,001–$50,000	−0.40	0.025	<0.0001*
$25,000 or under	Reference		
Language Other Than English Regularly Spoken at Home			
No	0.38	0.115	0.002*
Yes	Reference		
Mother's Level of Education			
Bachelor's degree or higher	0.96	0.145	<0.0001*
Some college	1.06	0.043	<0.0001*
High school diploma or GED	0.26	0.042	<0.0001*
Less that high school	Reference		
Received Early Special Education Services			
Yes	−0.90	0.119	<0.0001*
No	Reference		
Child's Age	−0.18	0.018	<0.0001*
Constant	1.27		

Note: $R^2 = 0.17$, $df = 56$. *Statistically significant based on $\alpha = 0.01$.
[a]SAS Proc Surveyreg does not produce standardised regression coefficients.

Table 5: Binary logistic regression analysis for variables associated with receiving versus not receiving general education instruction in one or more academic content areas

Factors	B	Adjusted OR	99% OR CI	P
IEP Meeting Attendance				
Yes	0.72	2.06	0.31, 13.89	0.330
No	Reference			
Parents' Involvement				
Yes	0.37	1.45	0.65, 3.22	0.234
No	Reference			
Child Expected to Live Independently				
Yes	0.95	2.58	0.96, 6.77	0.011
No	Reference			
Child Expected to Graduate from High School				
Yes	0.28	1.33	0.80, 2.20	0.146
No	Reference			
Child Expected to Get a Paid Job				
Yes	−0.28	0.76	0.32, 1.80	0.405
No	Reference			
Household Income				
Over $50,000	−0.21	0.81	0.38, 1.73	0.477
$25,001–$50,000	−0.00	1.00	0.39, 2.58	0.992
$25,000 or under	Reference			
Language Other Than English Regularly Spoken at Home				
Yes	0.06	1.130	0.55, 2.06	0.819
No	Reference			
Mother's Level of Education				
Bachelor's degree or higher	2.29	9.86	3.46, 28.13	<0.0001*
Some college	2.05	7.77	1.95, 30.99	0.0001*
High school diploma or GED	1.13	3.11	1.18, 8.17	0.003*
Received Early Special Education Services				
Yes	−1.30	0.27	0.13, .57	<0.0001*
No	Reference			
Child's Age	−0.17	0.84	0.67, 1.05	0.042
Constant	−0.58			

Note: Likelihood ratio $\chi^2 = 47.21$, $df = 13$. *Statistically significant based on $\alpha = 0.01$.

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Does the frequency of parental involvement explain placement?

Both parental involvement variables, including IEP meeting attendance and school work support, contributed to the explanation of time spent in a general education setting. Students whose parents had attended at least one IEP meeting in the past 2 years spent, on average, 80 minutes more per day ($b = 1.33$, $P < 0.0001$) in a general education classroom than students whose parents did not attend an IEP meeting. For students of parents who provided school support, they averaged about 17 minutes ($b = 0.28$, $P < 0.0001$) more per day in general education than students whose parents were not involved with school.

Do parental expectations for their child's future explain placement?

Only one of the parental expectations factors played a statistically significant role in explaining the amount of time a child spent each day in a general education setting. Students whose parents believed they would eventually be able to live alone or without support, spent an average of about 49 minutes more per day in general education ($b = 0.82$, $P < 0.0001$) than students whose parents did not expect them to live independently. Parents' expectations regarding the likelihood that their child would obtain a paid job in the future did not account for differences in time spent in a general education setting ($b = 0.01$, $P = 0.90$), nor did their expectations regarding their child's potential high school graduation ($b = 0.08$, $P = 0.02$) explain time spent in a general education setting. To assess the possibility that these types of long-range goals might be less salient to parents of younger students, we also tested the potential moderating effect of age on the three parental expectation variables and found that age did moderate expectations about a child's potential to obtain future paid employment ($P = 0.002$). In addition to the variables examined to answer the five research questions, age of child was also found to be significantly related to amount of time students with multiple disabilities spent in general education. As students aged, they generally were less frequently included in general education ($b = -0.18$, $P < 0.0001$), with 12-year olds spending more than an hour less per day in general education settings compared with 6-year olds, holding other factors constant.

Do risk factors, for example, family's income, parental education and primary language spoken in the home explain placement?

Findings based on the OLS regression indicated all three of the risk factors contributed uniquely, $P < 0.01$, to the explanation of the amount of time students spent in general education. Specifically, parents' education seemed to provide an advantage in that those whose mothers had either some college or a college degree spent close to an hour more per day ($b = 1.06$ and $b = 0.96$ respectively) in general education compared with those whose mothers had less than a high school diploma. Students whose mothers had a high school diploma spent about 16 minutes per day ($b = 0.26$) more in a general education setting than those mothers did not complete high school. These effects were assessed with other child and parental factors controlled.

In terms of family income, results indicated a non-linear relation between income and time spent in general education. Students in the wealthiest households (i.e., those with household annual income of $50,000 or more) on average did not differ ($b = 0.12$, $P = 0.11$) in the amount of time spent in general education compared with those in the poorest households (i.e., those families earning $25,000 or less per year). However, students in the middle income bracket (representing households with annual income between $25,000 and $50,000) spent about 24 minutes less ($b = 0.40$, $P < 0.0001$) each day in a general education classroom compared with those in the lowest income group, after controlling for other variables in the model.

Language spoken at home was also associated with the amount of time students with multiple disabilities are placed in a general education setting. Consistent with expectations, students who live in households where English is the language regularly spoken overall spent more time (an average of almost 23 additional minutes; $b = 0.38$, $P = 0.002$) each day in general education, after taking into account other factors such as mother's level of education, household income, parents' expectations, etc.

In the logistic regression, the only risk factor explaining receipt of general education academic instruction in at least one content area was parents' education. Less education was associated with decreasing odds that a child would receive at least some academic instruction in a general education setting. Specifically, the odds of a child's receiving general education were 9.82 ($P < 0.0001$) times lower for students whose mother had not completed high school compared with students whose mother had a college degree. Even when comparing those with less than high school education to those whose mothers had a high school diploma or GED, the odds were 3.11 times lower for a student to receive general education instruction in any class if the mother had not completed high school.

Does the child's previous early intervention/early childhood special education experience explain placement?

In terms of the amount of time spent each day in a general education setting, students who received early special education services differed significantly ($P < 0.0001$) from those who did not receive these types of services before the age of 6. Students receiving EI/ECSE spent an average of 54 minutes ($b = -0.90$) less each day in

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general education than their peers. Results of the logistic regression also indicated that those who received early special education services had 72.9% lower odds ($P < 0.0001$) of receiving any academic general education instruction.

Discussion

The findings from the current investigation provide the first national picture of the possible factors that might explain placement of students with multiple disabilities in general education classrooms. The present study extends the work of previous researchers (Cosier and Causton-Theoharis, 2011; Cosier, Causton-Theoharis and Theoharis, 2013; Fisher and Meyer, 2002; Szumski and Karwoski, 2012) by (1) examining a large and varied number of variables supported by literature to explain placement decisions that have implications for educational practice and (2) utilising a large, nationally representative sample size (usually a challenge when investigating any phenomenon for students with low-incidence disabilities).

Parents often play a major role in the amount of time that students with multiple disabilities spend in classes with their non-disabled peers. Results indicate significant relationships between all but two explanatory variables and the hours spent daily in general education classrooms. In accordance with the study conducted by Szumski and Karwoski (2012) in Poland, in our study, placement decisions were associated with parental involvement at school and at home. Most importantly, when parents attended IEP meetings, their children spend about 20% more time in general education settings (80 minutes). This outcome may indicate that when parents are active members of the planning team, their input influences placement choices. Efforts must continue to encourage full parent participation in all facets of their child's school experience, especially the IEP meetings.

To a lesser degree, parental expectations influence inclusive placements for their children. However, the influence of parental expectations on the placement of students with multiple disabilities is confounding. While parents may have high hopes for their child's future education and employment, these expectations do not seem to influence whether or not students receive academic content or spend more time in general education setting. Only one factor, whether parents believed that their child would live alone, contributed to the variance in the amount of time students with multiple disabilities spent in general education classrooms. The importance of this finding should not be overlooked. Parental beliefs may have a powerful influence on their children's futures as they progress towards more independence (Doren, Gau, and Lindstrom, 2012; Yamamoto and Holloway, 2010). It may also be that parents' beliefs may be based on their knowledge of their child's potential as an adult; these children may be higher functioning in ways that their parents find substantial.

Similar to what is reported in literature (Szumski and Karwoski, 2012), mothers' educational level was another significant factor in explaining the variance in placement in general education classrooms in this study. The higher the mothers' level of education the greater the likelihood that the child was placed in a general education classroom for more hours or received more of his/her academic instruction in a general education classroom. Differences in placement opportunities were dramatic. The odds of general participation were nearly 10 times greater (9.82). This finding may imply that parents who have placed additional value on their own education may be better advocates for their children as placement decisions are considered. Parents with more education may also be more effective at communicating expectations for general education placements to school personnel. Fostering parent–professional partnerships is essential for improving the outcomes and placement of students with multiple disabilities. Household income was also a factor in student placement. Interestingly, children of parents in the middle income range ($25,000–$50,000) spent less time in general education compared to families making more or families making less.

Language other than English spoken at home may also be a potent barrier to general education access. These data support the assumption that children from households where English is the primary language would spend more time than children whose family spoke another language at home. There may be several factors contributing to these findings. Parents may be less likely to attend IEP meetings and when they do, they may have difficulty participating or communicating their desires for inclusive placement. Certainly, families who do not speak English at home are a heterogeneous group with varying cultures, races, birthplaces and socioeconomic statuses. Nonetheless, language is a deterrent for children's participation in the regular curriculum as this population continues to be marginalised.

Results also confirmed that older children with multiple disabilities spend about 15% (about 60 minutes) less time per day in general education classrooms. This finding is particularly disturbing given the normal advancement of curriculum in later grades. Academic achievement has been demonstrated to be positively influenced with additional exposure to the general curriculum (Cosier, Causton-Theoharis, and Theoharis, 2013). Exposure to the more challenging general education curriculum is only part of the benefit from participation in general education classes. Social and emotional growth is also facilitated by time spent with non-disabled students whose abilities and maturation are wide-ranging. Additionally, teachers' educational expectations may also increase when students with more severe disabilities are included in their classes (Agran, Alper and Wehmeyer, 2002).

Children who received early intervention or early childhood services prior to age 6 were more likely to receive

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fewer hours per day in general education classrooms and were also less likely to receive academic instruction in a general education classroom. Thus, students who received early intervention or early childhood services are either receiving most of their academic instruction in special education settings or are receiving less academic instruction overall, both possibilities placing them at risk with respect to Free, Appropriate Public Education (Jackson, Ryndak, and Wehmeyer, 2008/2009). The early identification of some children may also be the result of more significant support needs at a younger age. Thus, the later inclusion of these children in general education settings may be hampered by the severity of their disability, availability of support services or the willingness of school administrators to place them in settings with general educators for extended periods.

Limitations

Despite the multiple strengths of this study such as, a large and nationally representative sample, numerous variables that allow for complex and broad analysis, three main limitations must be highlighted. First, all 10 independent variables were determined from the self-reported parent interview. Self-reported data pose concerns about the accuracy of the information. For example parents may have felt compelled to answer questions positively about parental involvement in their child's education or about their expectations of their child's future. Moreover, the time for recall 2 years from the date of occurrence (e.g., in the past 2 years, indicate whether or not the respondent attended a parent teacher conference other than an IEP meeting) may have posed a problem to the accuracy of the data shared. Furthermore, the study relates to the challenges posed by using national, longitudinal data sets. While the SEELS data set allowed for extensive analysis of *breadth*, there were limitations with respect to analysis of *depth*.

Future implications

Implications for policy. The current results delineate family and programme level variables such as parental involvement as influencers in the placement of students with multiple disabilities. It is imperative that local and federal level policy-makers have a more complete knowledge of what guides the placement of students with multiple disabilities in general education settings to ensure that students with disabilities have access to not only general education classrooms, but also to the regular academic curriculum. Armed with these and other available data, policy-makers must provide guidance not only through formal channels such as rules and mandates but funding must also be available for teacher professional development for teachers to recognise and be alert to the risks for groups of students indicated in this study. For example, this study indicated that mothers' higher levels of education was associated with better chances for their children to be included in general education classrooms and higher likelihood of receiving instruction in at least one content area. Together, these factors may show that mothers with more education may be more inclined to advocate for their child's placement in settings with non-disabled peers. Conversely, it is important that teachers and administrators explicitly support parents whose educational level may obstruct their ability to successfully advocate for their children's placements.

Additionally, language discrimination has been a consistent issue for individuals trying to attain full access to the educational system (U.S. Department of Education, Office for Civil Rights, 2011). In the current study, students' home language was a significant factor related to the amount of time spent in general education. As student diversity increases, policy-makers must be consistently vigilant to potential roadblocks to inclusion for those who do not speak English language.

Policy decisions have also been influential in the expansion of early intervention services for young children with disabilities and their families (Epley, Summers and Turnbull, 2011). In fact, early intervention has been shown to positively impact long-term student outcomes (Jeon, Peterson, Wall, et al., 2011; Raspa, Bailey, Olmsted, et al., 2010). However, findings from the current study reveal that students with multiple disabilities who had received early intervention services had less access to general education classrooms and academic content, especially as they grew older. To reduce the likelihood of exclusion from least restrictive environments, a greater understanding of factors affecting access to the general education curriculum is necessary for informing and influencing policy and funding decisions relative to early intervention.

Implications for practice. Schools and teachers have a responsibility to provide consistent, standards-based instruction for all students, including students who have multiple disabilities (Children and Family Act, 2014; IDEA 2004). Nonetheless, recent UK data indicate that the placement of students with severe and profound disabilities in separate special schools has increased (Department for Education, 2014). Factors explaining this fact have not been investigated in the UK, but results from the current study may be useful in examining implications for practice and improved teacher training to increase the frequency for access to and participation in the general curriculum in less restrictive settings.

Segall and Campbell (2014) found that teachers who believed they were competent teachers were more likely to recommend student placement in a less restrictive setting. Similarly, teachers who believed that significant stakeholders (i.e., principal, other general education teachers, director of special education, and parents) valued inclusion were more likely to place students in a less

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restrictive placement. Studies investigating the relationship between teacher training, experience and beliefs for successful inclusion to occur (McGregor and Campbell, 2001) have indicated that greater levels of knowledge and experience with students with special education needs are associated with more positive attitudes towards inclusion, and thus, better outcomes. The results of the current study highlight the potential for targeted inservice and pre-service teacher training (with increased field experiences) which may result in more positive teacher attitudes and dispositions towards increasing access to academic inclusion for children with multiple disabilities. Teams responsible for IEP development and placement need to ensure that variables other than core curriculum standards and student needs are not influencing their educational decisions.

Implications for changes in practice also resonate in the UK relative to improving relationships with parents and increasing parental control over the education placement of their children. Respondents to a recent survey of special educational needs co-ordinators (SENCO) indicated the importance of a shift in their roles from managerial to that of a parental liaison, supporting stronger relationships of parents with disabilities (Pearson, Mitchell, and Rapti, 2015). According to Pearson, Mitchell, and Rapti (2015), parents will be expected to have a more active role in placement decisions for their children. As findings of the current study indicate that children of parents with lower incomes and those whose families' primary language is not English have a lower frequency of access to the general curriculum, providing parents greater voice in educational setting decisions should be a major goal for SENCOs. Providing opportunities for parents of all education levels and economic strata to interact together (e.g., in support groups, school activities, etc.) may be an important way to bolster the confidence and system knowledge of parents of lower education levels and SES so as to increase the likelihood of their advocating for their children's access to general education curriculum.

Implications for research. Given the limited research on factors that contribute to the inclusion of students with multiple disabilities, this study provides an opportunity to extend the discourse. The findings of our study have a number of other implications for future research. Clearly, the family can play a prominent role in both placement and access to academic content. Future research should attempt to examine the impact of parental participation at home and school on student placement. Additionally, research is necessary on how families influence their children's access to general education academic content. Perhaps the most compelling finding relates to the correlation between parents' education level and amount of time spent in general education classes accessing the regular curriculum. While it is not clear why these findings emerged, it may be postulated that mothers with higher levels of education are better equipped to effectively communicate with school decision makers regarding the educational placement of their child. A greater understanding of these interrelationships is necessary.

It is imperative that we continue to improve our understanding of factors that contribute to the inclusion of this group of students in general education, and to develop ways to increase their participation in these settings. Distinctions should also continue to be drawn between inclusion in the general education classroom and access to the regular curriculum. Simply being included in a setting does not necessarily mean that students will have access to the same curriculum as their non-disabled peers. Questions that should be addressed in future investigations should include, (1) How can available individualised and curricular supports based on universal design for learning at the classroom and programme level be fruitfully employed to alter placement decisions towards more inclusive placements? and (2) How can these students continue to be educated in general education classrooms as they grow older and curriculum content becomes more complex and distributed over a wider range of domains? These, and other questions suggested by our findings, can form a basis for research that will lead to better and more integrated learning experiences for these and other students who experience exclusion from general education.

Acknowledgements
No funding was received for work on this manuscript.

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