Title: Is there a link between classmates with emotional and behavioral disorders and other students' absences

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Abstract Body

Background / Context:

Many more students with disabilities are being placed in general education classrooms (U.S. Department of Education, 2015). Given these changes to the general education classroom landscape, many educational stakeholders have questioned whether the diverse needs of students with disabilities can be adequately addressed in the context of a mainstream general education classroom (Moon, Todd, Morton & Ivey, 2012). As schools attempt to balance the variety of needs, maintaining a high quality education for all students becomes increasingly challenging.

Students with emotional disturbances (EDs) are of particular importance when considering mainstreaming of students with disabilities, given that they are the most likely of the major disability classifications to cause classroom disruptions and exhibit behavioral issues (Maloney & Schenker, 1995). Therefore, with mainstreaming, some are concerned that students with EDs may distract other classmates (Evers, 2010; National Dissemination Center for Children with Disabilities, 2010). This concern is grounded in claims that peers exposed to disruptive behaviors are more likely to experience a decline in their own attitudes toward school and school engagement (Juvonen, Graham, & Schuster, 2003), leading to higher rates of absenteeism (Bealing, 1990; Harte, 1994; Reid, 1983; Southworth, 1992).

Absenteeism is critical to understanding key outcomes for students. High rates of absences negatively correlate with academic achievement, grade promotion, and high school completion (Gottfried, 2009; Dreyfoos, 1990; Finn, 1993; Steward et al., 2008). Absences are also associated with increased social and behavioral issues (Ekstrom et. al, 1986; Finn, 1989; Johnson, 2005; Newmann, 1981). This is particularly salient for children in kindergarten; out of all years of elementary school, absenteeism is indeed highest in kindergarten (Balfanz & Byrnes, 2012). Therefore, key issues surrounding absenteeism as they pertain to educational and behavioral adjustments might be exacerbated in the first year of schooling.

Purpose / Objective / Research Question / Focus of Study:

Given the concerns about including students with EDs in the early elementary education classroom alongside a dearth of research in this area surrounding the critical outcome of absenteeism, this study asks the following questions:

> Does the presence of a classmate with an ED predict differences in absence outcomes for other students in the classroom?
> Do these associations differ based on individual or teacher characteristics?

To inform these research questions, the present study uses a conceptual framing drawn from prior research on the peer effects of the inclusion of students with disabilities and students with behavioral issues on achievement and socio-behavioral outcomes. First, the inclusion of students with EDs could produce positive <u>direct</u> effects on peers, as nondisabled students may form interpersonal bonds resulting from their interactions with diverse students. As absenteeism is associated with alienation from classmates, teachers and school (Ekstrom, et al., 1986; Finn, 1989; Johnson, 2005; Newmann, 1981), this positive environment may reduce absences for other students as they make meaningful connections with their peers with EDs, thereby making the classroom environment more engaging. Exposure to students with EDs may also be associated with positive <u>indirect</u> effects for other classmates, such as benefitting from more resources dedicated to specific classrooms that host students with disabilities (Hanushek, Kain, & Rivkin,

2002).

However, the inclusion of students with EDs could yield negative direct effects on other classmates, given that students with EDs often exhibit externalizing behaviors such as aggression or hyperactivity (Evers, 2010; National Dissemination Center for Children with Disabilities, 2010). As prior research suggests, peers exposed to other students' disruptive behaviors are more likely to decline in their own school engagement, to have more negative attitudes toward school, and to experience less success in the classroom (Henry & Rickman, 2007; Juvonen et al., 2003; Lazear, 2001; West & Sloane, 1986). Students with EDs may also be associated with negative indirect effects on their peers. Students with EDs require additional time and attention from the classroom teacher, potentially taking away from general classroom instruction (Downing, Eichinger, & Williams, 1997; Greene, Beszterczey, Katenstein, Park, & Goring, 2002; Lazear, 2001). As teachers are catering more time and instruction to students with EDs, this creates a less engaging classroom environment for peers. The importance of the classroom environment and student engagement cannot be overlooked.

Setting:

The data utilized come from the Early Childhood Longitudinal Study – Kindergarten Class of 2010-2011 (ECLS-K:2011). The National Center for Education Statistics (NCES) utilized a three-stage stratified sampling design in order to ensure national representation of students.

Population / Participants / Subjects:

The first two waves of survey data collection occurred in the fall and spring of kindergarten. This study utilizes data from both waves. After multiple imputation, we had approximately *N*=14,330 students.

Research Design:

The key predictor variable used in this study was a binary indicator for whether a classroom contained a student with an ED. In the spring survey wave, a teacher was asked to report the number of students with an ED in the classroom. Constructing this measure as binary is consistent with prior research on classmates with EDs (e.g., Fletcher, 2010) as well as classmates with other high needs characteristics, like limited English proficiency (e.g., Cho, 2012). Aside from consistency with prior research, the motivation for constructing this variable as binary was that very few teachers reported having more than one ED student in his or her classroom. Approximately 75 percent of all classrooms that had students with EDs had only one student. Note that our sample only consists of students without an ED. This allows for a more clear-cut estimate of the association between having a classmate with an ED and absences.

Baseline model. To examine the role of having a classmate with an ED on other students' absences, this study uses a baseline model:

$$A_{ijk} = \beta 0 + \beta 1 ED\text{-}_{ijk} + \beta 2 D_{ijk} + \beta 3 S_{ijk} + \beta 4 TC_{jk} + \varepsilon_{ijk}$$

where A is an absence outcome for student *i* in classroom *j* in school *k*. Note that we had two forms of outcomes, as mentioned above: number of absences as well as an indicator for being chronically absent. When any model was run for number of absences, we employed a standard linear regression. When any model was run for chronic absence as the dependent variable, a logistic regression model was utilized as standard ordinary least squares assumptions were not upheld when the outcome was binary.

In this equation, ED represents an indicator for having a classmate with an ED; D represents student demographic characteristics; S represents student kindergarten entry skills; and TC represents teacher and classroom characteristics. The error is clustered-adjusted at the level of the classroom to take into account that students are nested within classrooms.

One concern that arose when examining the estimates from the baseline model was that there may be unobserved school-level factors that are correlated with both absence outcomes as well as with the chances of having a classmate with an ED. As described by Fletcher (2010), highly involved parents might choose to send their children to schools where there is a lower chance of having a classmate with an ED. As described by Gottfried (2014), some students may be in schools with highly involved administrators who support fully inclusive classroom settings. In both examples, students without disabilities might have different absence patterns and different chances of having a classmate with an ED based on unobserved school-level characteristics, and as a result, a second model was employed:

$$A_{ijk} = \beta 0 + \beta 1 ED\text{-}_{ijk} + \beta 2 D_{ijk} + \beta 3 S_{ijk} + \beta 4 TC_{jk} + \delta_k + \varepsilon_{ijk}$$

where δ_k represents school fixed effects (i.e., indicators for school). Because there was within-school variation at the classroom level in having a classmate with an ED, unobservable school-specific factors were held constant in the kindergarten school year (such as school-level educational investments, organizational practices, aggregate parental involvement, and inclusion policies). This way, the principal source of variation used to identify the classmate effect occurs across classrooms within each school.

Data Collection and Analysis:

Data were collected from a national sample of children in the kindergarten class of 2010-2011. Information was collected about these children and their families and schools through direct assessments, interviews, and surveys.

Table 1 presents the descriptive statistics for all dependent and independent variables in this study. Our outcome was student absences, which was derived from the spring teacher report of student performance. Note that absence data are only available in the kindergarten wave of data. Two outcome measures were explored here. First, we examined a student's total number of absences in a year. On average, a student is absent 5.97 total days per year, with a standard deviation of 4.85. Second, we explored a binary indicator that identifies students who were chronically absent, which is defined as missing more than 11 school days in a year (Gottfried, 2014).

Findings / Results:

Table 2 presents the results from the two empirical models capturing the association of having a classmate with an ED on other students' absences. In the baseline model, there is no observed relationship between having a classmate with an ED and other students' absences. The conclusion changes, however, when examining the second model. The second column incorporated school fixed effects, which imposed that all comparisons between having a classmate with an ED be compared between students in different classrooms within the same school. Interpreting the results, students who had a classmate with an ED missed 0.41 days of school compared to students who did not have a classmate with an ED.

The second set of outcomes, presented in Table 3, examined the likelihood of chronic absenteeism as an outcome. Similar to the first set of outcomes, the odds that a student was chronically absent are increased when incorporating school fixed effects. The odds of being

chronically absent were 1.38 times higher for students who had a classmate with an ED.

Table 4 presents results by individual subgroups of interest to test if certain types of students were particularly susceptible to the observed relationship. In more detail, the magnitude of the estimated association for girls was almost three times larger than the coefficient for boys; additionally, the coefficient for boys was not statistically significant. In terms of teacher characteristics, students who had a classmate with an ED but whose teachers were certified in special education had fewer absences than students who had a classmate with an ED but whose teachers were not certified in this area.

Conclusions:

As special education inclusion policies become more widespread, classroom compositions are changing in ways that affect all students. The present study fills a critical gap in the literature by documenting the extent to which having a classmate with an ED is linked to kindergarteners' absences.

Because having a classmate with an ED is associated with total absences and with chronic absenteeism, it could be the case that those students whose absences are most associated with the presence of a classmate with an ED are those who were already on the margin of being classified as chronically absent. Thus, policymakers might be concerned that those students who had many absences to begin with may be tipped into the category of chronic absenteeism by the addition of a peer with an ED to their classrooms.

Additionally, the larger association observed for absences by girls prompts interesting follow-up research questions about specific ways in which the classroom environment changes as a result of the inclusion of a peer with an ED. Previous research has shown that boys are more likely to misbehave in response to the presence of a troubled peer in the classroom (Carrell & Hoekstra, 2010), a spillover effect that can result in even more disorderly classroom environments. It could be the case that girls attempt to avoid such disruptive classroom environments altogether by staying home from school.

The results of this study illustrate an association between reduced student absences and having a teacher who is certified in special education. Teachers who have attained a special education certification, however, have studied fundamental behavioral analytics protocols. These can be applied in the classroom to reinforce positive target behaviors by the student with an ED, assist with stimulus control, and maintain established behavioral repertoires so that the general classroom environment is more conducive to teaching and learning for all students.

There were some limitations in this study that could help to advance future work in this area. The first is that the ED designation available in the dataset was an aggregate indicator that combines students with unique disabilities into a single category. Even though those students may exhibit very different social or emotional behaviors, the dataset only reports an aggregate measure of ED. Therefore future research might consider relying on other sources of data to assess the relationship between classmate disabilities and absenteeism.

Finally, the analysis presented above utilizes cross-sectional data. While the focus on kindergarten was critical given that this year has the highest incidence of absenteeism, additional longitudinal analyses would be useful in two capacities. First, it would permit for an analysis of changes to classroom composition over time, comparing absences in years when peers have a classmate with an ED versus years when they do not. In addition, looking over the K-12 span would provide insight into the relative weight of classmate effects as they relate to absenteeism.

Appendices

Appendix A. References

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Appendix B. Tables and Figures

Table 1.

Descriptive Statistics

	Mean	SD
Outcome		
Total Number of Absences	5.97	4.85
Chronically Absent	0.14	4.85
Key variable		
EBD classmate	0.10	0.30
Student demographic information		
Male	0.51	0.50
White	0.76	0.43
Hispanic/Latino	0.26	0.43
Black/African American	0.17	0.38
Asian	0.10	0.31
First-time kindergartner	0.95	0.22
Age (months) at kindergarten entry	66.04	4.64
NCES SES composite	-0.08	0.82
English language learner	0.14	0.34
Student cognitive and non-cognitive skills (fall entry)		
Reading	37.27	9.66
Math	30.24	10.98
Approaches to learning	2.95	0.68
Self-control	3.08	0.63
Interpersonal	2.98	0.64
Externalizing problem behaviors	1.60	0.63
Internalizing problem behaviors	1.46	0.49
Teacher Characteristics		
Male	0.02	0.15
Age	43.43	11.60
Hispanic/Latino	0.10	0.30
Asian	0.03	0.15
Black/African American	0.06	0.25
Experience (years)	14.61	9.77
Teacher certification	0.89	0.31
Masters or higher	0.46	0.50
Number of professional development activities	3.14	1.95
Teaches full-day kindergarten	0.81	0.39
Took special education courses	0.71	0.46
Special education certification	0.09	0.28
Classroom characteristics		
Class size	18	8.13
Percent girls	0.48	0.10
Percent white	0.53	0.36
n	14,330	

Table 2.
Estimates of the Effect of EBD Classmates on Students' Total Absences.

VARIABLES	(1) OLS	(2) School Fixed Effects
EBD	0.09	0.41*
	(0.20)	(0.21)
MODEL CONTROLS		
Non-Cog: Extern Problem Behaviors	-0.41***	-0.53***
	(0.13)	(0.12)
Non-Cog: Intern Problem Behaviors	0.55***	0.46***
	(0.11)	(0.11)
Non-Cog: Approaches to Learning	-0.72***	-0.73***
	(0.13)	(0.12)
Non-Cog: Interpersonal	0.20	0.07
	(0.15)	(0.15)
Non-Cog: Self-Control	0.06	0.01
	(0.17)	(0.17)
Math IRT Scale Score	-0.03***	-0.03***
	(0.01)	(0.01)
Reading IRT Scale Score	-0.00	-0.01
	(0.01)	(0.01)
Student Male	-0.29***	-0.29***
	(0.09)	(0.09)
Student Black/African American	-0.26	-0.32**
	(0.17)	(0.16)
Hispanic/Latino	0.05	0.02
	(0.16)	(0.16)
Asian	0.11	0.27
	(0.22)	(0.23)
English Language Learner	-1.06***	-0.89***
	(0.19)	(0.20)
Age (Months) at K Entry	-0.00	0.01
	(0.01)	(0.01)
Continuous SES Measure	-0.62***	-0.58***
	(0.08)	(0.08)
First Time Kindergartener	-0.54**	-0.68***
	(0.25)	(0.26)
Class Size	-0.01	-0.03***
	(0.01)	(0.01)
Class Percent White	0.13	0.09
	(0.24)	(0.35)
Class Percent Girls	0.05	0.65

	(0.64)	(0.70)
Teacher Teaches Full Day	0.44**	0.42
	(0.19)	(0.34)
Teacher Male	-0.46	-0.09
	(0.39)	(0.46)
Teacher's Age	0.01	0.00
	(0.01)	(0.01)
Teacher: Black/African American	-0.53*	-0.22
	(0.29)	(0.30)
Teacher: Hispanic/Latino	-0.52**	-0.37
	(0.25)	(0.27)
Teacher: Asian	-1.38***	-0.63
	(0.43)	(0.60)
Teacher Experience (Years)	-0.00	-0.01
	(0.01)	(0.01)
Teacher: Sp. Ed. Certification	0.05	0.16
	(0.20)	(0.21)
Teacher: Sp. Ed. Courses	0.09	-0.01
	(0.13)	(0.14)
Certified	-0.16	0.06
	(0.22)	(0.23)
Teacher: Masters or Higher	-0.03	0.05
	(0.12)	(0.13)
Professional Development	-0.13***	-0.15***
	(0.04)	(0.04)
Observations	14,329	14,329
School FE	NO	YES

Note: Robust standard errors in parentheses. All regressions include a constant. *** p<0.01, ** p<0.05, * p<0.10

Table 3.
Estimates of the Effect of EBD Classmates on Students' Likelihood of Chronic Absenteeism

VARIABLES	(1) Logit	(2) Logit with School Fixed Effects
EBD	1.17	1.38**
	(0.13)	(0.19)
MODEL CONTROLS		
Non-Cog: Extern Problem Behaviors	0.88*	0.81***
	(0.06)	(0.06)
Non-Cog: Intern Problem Behaviors	1.31***	1.33***
	(0.08)	(0.09)
Non-Cog: Approaches to Learning	0.81***	0.78***
	(0.06)	(0.07)
Non-Cog: Interpersonal	1.07	1.02
	(0.09)	(0.10)
Non-Cog: Self-Control	1.02	0.99
	(0.09)	(0.10)
Math IRT Scale Score	0.99***	0.99***
	(0.00)	(0.00)
Reading IRT Scale Score	1.00	1.00
	(0.01)	(0.01)
Student Male	0.97	0.97
	(0.05)	(0.06)
Student Black/African American	0.94	0.91
	(0.08)	(0.09)
Hispanic/Latino	0.94	0.96
	(0.08)	(0.09)
Asian	1.18	1.47**
	(0.15)	(0.22)
English Language Learner	0.77**	0.85
	(0.08)	(0.11)
Age (Months) at K. Entry	1.00	1.01
	(0.01)	(0.01)
Continuous SES Measure	0.69***	0.68***
	(0.03)	(0.04)
First Time Kindergartener	0.86	0.72**
	(0.11)	(0.11)
Class Size	0.99	0.96***
	(0.01)	(0.01)
Class Percent White	1.06	1.05
	(0.15)	(0.26)
Class Percent Girls	1.02	1.10

	(0.39)	(0.60)
Teacher Teaches Full Day	1.31**	1.38
	(0.18)	(0.40)
Teacher Male	1.05	1.15
	(0.28)	(0.39)
Teacher's Age	1.00	1.00
	(0.00)	(0.01)
Teacher: Black/African American	0.89	0.82
	(0.15)	(0.19)
Teacher: Hispanic/Latino	0.94	0.79
	(0.13)	(0.15)
Teacher: Asian	0.62*	0.92
	(0.16)	(0.33)
Teacher Experience (Years)	1.00	1.00
	(0.01)	(0.01)
Teacher: Sp. Ed. Certification	1.13	1.13
	(0.13)	(0.17)
Teacher: Sp. Ed. Courses	1.07	1.02
	(0.09)	(0.10)
Certified	0.84	0.90
	(0.11)	(0.15)
Teacher: Masters or Higher	0.88	0.88
	(0.07)	(0.09)
Professional Development	0.92***	0.90***
	(0.02)	(0.03)
Observations	14,329	12,081
School FE	NO	YES

Note: Robust standard errors in parentheses. All regressions include a constant. *** p<0.01, ** p<0.05, * p<0.10

Table 4.

Subgroup Estimates of the Effect of EBD Peers on Students' Total Absences

	(1) Boys	(2) Girls	(3) White	(4) Black	(5) Hispanic	(6) ELL	(7) Non-ELL	(8) Sp. Ed. Cert.	(9) No Sp. Ed. Cert.	(10) MA or More	(11) BA Degree
EBD	0.26	0.65**	0.35	0.66	-0.23	-0.65	0.56**	-1.84*	0.53**	0.28	0.42
	(0.25)	(0.31)	(0.23)	(0.58)	(0.40)	(0.57)	(0.23)	(0.98)	(0.22)	(0.35)	(0.31)
n	7,287	7,011	10,180	2,228	3,154	1,797	12,488	1,220	12,575	6,211	7,676
School FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Note: Sp. Ed. Cert. stands for Special Education Certification. Robust standard errors in parentheses. All models control for school fixed effects. *** p<0.01, ** p<0.05, * p<0.10