Exploring the Developmental Skills & Supports of Students in Special Education

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April 2020

Paper presented at the annual meeting of the
American Educational Research Association, San Francisco, CA. (Conference canceled)

Citation:

Dosedel, M., Rodriguez, M.C., & Mrutu, A. (2020, April 17-21). *Exploring the developmental skills & supports of students in special education* [Paper presentation]. American Educational Research Association Annual Meeting, San Francisco, CA. (Conference canceled)

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Abstract

Social and emotional learning (SEL) is gaining prominence in efforts to meet the needs of all students. Little is known about the associations between SEL and important educational outcomes for students who receive special education services. We explore these associations through a validity argument regarding the interpretation and use of SEL based on data from a large-scale student survey. We find students who receive special education supports report lower levels of most SEL measures than those who do not; the trends observed across grade levels are similar. We find little evidence of significant differential prediction, yet SEL measures tend to be weaker predictors of educational behaviors and outcomes for students who receive special education services compared to those who do not.

Background

Social and emotional learning (SEL) is gaining attention worldwide (Scales, Roehlkepartain, & Shramko, 2016), becoming a more common part of the conversation in K-12 education, particularly regarding the challenges of educational equity. Due to the flexibility allowed in Every Student Succeeds Act (ESSA), many states are investigating the possibility of using SEL measures to help identify underperforming schools (CASEL, 2018). In special education, social and emotional learning generally has more presence than within general education, particularly regarding students with emotional or behavioral disorders and in schools implementing behavioral interventions. Researchers have documented the overrepresentation of students receiving special education services in foster care (between 25 and 50%) and juvenile corrections systems (up to 78%; Leone, & Weinberg, 2012), and strong associations with absenteeism, misbehavior in school, grade retention, and poor school academic performance (Leiter & Johnsen, 1997), all important contexts for the role of SEL.

Through a meta-analysis, based on thirty-two individual studies, Norwicki (2003) claimed that teachers perceive students with learning disabilities to have less developed social skills than their peers and that students are more socially accepting of students without learning disabilities. Additionally, low social skills of students who receive special education services for emotional and behavioral challenges correlates with low social acceptance among peers; however, this trend is not as strong among the entire special education population (Frostad & Pijl, 2007). Therefore, the development of and direct instruction in social and emotional skills may be more advantageous for a subset of the population of students who received special education services.

The purpose of special education services is "the optimal development of the student as a skillful, free, and purposeful person, able to plan and manage his or her own life and to reach his or her highest potential as an individual and as a member of society" (Council for Exceptional Children, 1997). Despite this wholistic developmental view of special education services, the conversations occurring around adoption of SEL initiatives continue to focus on general education and much less so on its potential impact on students who receive special education services. The purpose of this study is to learn more about the SEL skills development of students

who receive special education services and how these characteristics are associated with important educational outcomes.

Perspectives

An argument for the interpretation and use of social and emotional skills is: "Social and emotional development comprises specific skills and competencies that people need in order to set goals, manage behavior, build relationships, and process and remember information" (The Aspen Institute, 2018, p. 2), remarkably similar to the Council for Exceptional Children's purpose of Special Education. The National Research Council (Eccles & Gootman, 2002) argued that personal and social assets facilitate well-being and successful transition through adolescence into adulthood, noting the importance of context, experiences, settings, and people. Sufficient evidence exists to support a positive youth development approach, rather than deficit approaches, as developmental skills and supports impact all youth (Benson et al., 2006).

From a pragmatic perspective, school leaders are interested in SEL as a way to understand, and potentially moderate challenging behaviors and promote prosocial behaviors. We adapted Search Institute's Developmental Asset Profile (DAP) framework to measure positive identity, commitment to learning, social competence, empowerment, teacher/school support, and family/community support, because such constructs are meaningful in the context of positive youth development. Positive identity is an early SEL construct; Erikson's (1959) psychosocial development theory situates identity formation as a hallmark of adolescence. Students with commitment to learning and a strong willingness to complete tasks at school level are predicted to sustain motivation and subsequent college academic performance (Shernoff & Hoogstra, 2001). Social competence is beneficial for comprehending information and interactions within classrooms (Wentzel, 1991). Empowerment supports environments conducive learning, and enables productive student-teacher dialogue (Hemmings, 2000). When teachers support student autonomy, academic motivation is enhanced (Hamm & Reeve, 2002; Reeve, 2002; Reeve, Bolt, & Cai, 1999). And, when parental values and practices align with school expectations, family support elevates educational outcomes (Kreieder, Caspe, Kennedy, & Weiss, 2007). The evidence is much less comprehensive regarding these positive associations for students who receive special education services. The body of evidence regarding SEL constitutes an interpretation and use argument (IUA), which becomes the target of validation (Kane, 2013). Our concern is the validity of SEL score interpretation and use for students who receive special education services.

Research Questions

We explore SEL developmental skills and supports of students who receive special education services relative to those in who do not. We also explore the associations among these skills and supports relative to educational outcomes. These questions speak to the validation of the IUA for measures of SEL.

1. How do the levels of SEL developmental skills and supports differ between students who receive special education services and students who do <u>not</u> receive special education services?
2. How do these skills and supports vary across grades?
3. Does a given level of a SEL skills or supports differentially predict educational outcomes for students who receive special education services?

Methods

The data come from the 2016 administration of the Minnesota Student Survey (MN Department of Education, 2017). This survey was designed in collaboration by Minnesota departments of Education, Health, Human Services, and Public Safety. It is anonymously administered triennially in public schools in grades 5, 8, 9 and 11. Participation in the survey is optional and was completed by approximately 80 percent of all Minnesota school districts in 2016. This survey includes a wide variety of questions, is administered in class, and generally is completed in forty-five minutes or less. The purpose of the survey is to monitor important trends in student behaviors and experiences in multiple areas. Survey content includes questions reflective of the interests of each of its sponsors. Starting in 2013, questions were added related to students' SEL. The measures used in this study were developed from those questions by the Minnesota Youth Development Research Group at the University of Minnesota as described below. An IUA has been articulated and validated for these measures in the general population and is summarized below (Rodriguez, 2017; Rodriguez, Dosedel, & Kang, 2019).

Measures

Based on the DAP framework (Search Institute, 2013), several measures were constructed and psychometrically evaluated from survey items. These include three developmental skills (internal assets): Commitment to Learning (CtL), Positive Identity and Outlook (PIO), and Social Competence (SC); and three developmental supports (external assets): Empowerment (EP), Family/Community Support (FCS), and Teacher/School Support (TSS). Each measure was evaluated for psychometric quality, including confirmatory factor analysis; differential item functioning based on sex, race/ethnicity, and grade; and scaling quality and model fit using the Rasch model (Rodriguez, 2017).

Two primary sources of validity evidence include content-related evidence (documented in Benson, 1990, 2002; Benson et al., 2006; and Search Institute, 2013) and internal-structure or construct-related evidence (documented in the MSS Technical Report, Rodriguez, 2017). To support construct-related inferences, the internal structure of the measures were evaluated through confirmatory factor analysis (CFA; using Mplus v. 7; Muthén & Muthén, 2012) and differential item functioning analyses by race/ethnicity, gender, and grade (using Winsteps v. 3.92; Linacre, 2016; with results summarized in Rodriguez, 2017). We followed common guideline for adequate fit indices where RMSEA is less than .10, CFI and TLI are greater than .90 (Brown, 2015; Kline, 2011), and standardized factor loadings are .40 or higher (Brown, 2015); although we note that in many factor analytic studies of research surveys, standardized factor loadings of .30 are often used to define salient loadings.

The measures were then scored using the partial credit Rasch model in Winsteps 3.92 (Linacre, 2016). The partial credit Rasch model allows each item to have its own structure (given the ordinal nature of the response scales) and places persons and items onto the same scale. The Rasch reliabilities of these measures were also adequate for brief measures: CtL (.70), PI (.79), SC (.79), EM (.72), FCS (.71), and TSS (.85).

For the developmental skills (CtL, PI, SC), a three-factor CFA was fit to the data. The global fit indices indicate adequate fit., where RMSEA is .08, CFI is .92, and TLI is .91. The model fit indices for each developmental skill as a separate measures also were estimated. For CtL, RMSEA is .11, CFI is .95, and TLI is .91; for PI, RMSEA is .17, CFI is .96, and TLI is .93; and for SC, RMSEA is .13, CFI is .94, and TLI is .92. In the three-factor CFA, the standardized

factor loadings ranged from .37 to .84 (18/20 are over .50). Overall, these fit indices and factor loadings support the use of these items as indicators of developmental skill measures. Moreover, since the measures are not used at the individual level, they provide strong indicators of developmental supports at the group level, the intended level of analyses.

A three-factor CFA was also fit to the data for the three measures of developmental supports (FCS, EM, TSS). The global fit indices indicate nearly adequate fit, where RMSEA is .13, CFI is .89, and TLI is .87. The model fit indices for each developmental support as a separate measure also were estimated. For FCS, RMSEA is .13, CFI is .98, TLI is .95; for EM, RMSEA is .23, CFI is .91, and TLI is .85; and for TSS, RMSEA is .13, CFI is .98, and TLI is .97. In the three-factor CFA, the standardized factor loadings ranged from .53 to .91. Overall, these fit indices, and particularly the factor loadings, support the use of these items as indicators of development support measures. Moreover, since the measures are not used at the individual level, they provide strong indicators of developmental supports at the group level, the intended level of analyses.

Our analyses include multiple developmental skills and supports. The disattenuated correlations among the three developmental skills range from moderate to high; the correlations of PI with CtL is .57, SC with CtL is .68, and SC with PI is .85. The disattenuated correlations among the three developmental supports are moderate; the correlations of FCS with EM is .77, TSS with EM is .63, and TSS with FCS is .73. These indicate that the developmental skills and supports are related but each account for substantial unique variance (squared values mostly .50 or lower), providing support for their use as distinct measures.

Participants

This study includes 168,733 students in grades 5, 8, 9, and 11, from the 2016 Minnesota Student Survey administration. The statewide special education enrollment rate is 14.2%, 17,555 students or 10.4% of the sample self-identified as receiving special education services or having an individualized education plan (IEP). Specifically, these students responded *yes* to the survey question asking "Do you have a IEP or get special education services?" This sample does not include students with the most severe disabilities as the survey is given in students' general education classes and students must be able to complete the survey themselves. Given this we assume, in aggerate, students tended to accurately identify their special education status and therefor our sample represents a good approximation of the population of students in Minnesota who receive special education services and are served significantly in general education settings.

Analysis

An effect size for comparing two groups across different measures is the standardized mean difference (Cohen's d = [SpEd M – NoSpEd M]/total SD). Cohen's d was computed for each SEL measure for students who receive special education services (SpEd) and those who do not (NoSpEd). Mean scores were examined across grade levels to investigate trends and developmental patterns.

To investigate the potential of differential prediction of meaningful educational outcomes based on SEL skills and supports we conducted a series of multiple linear regression and logistic regression models. Specifically, we built models to identify whether SEL skills and supports differentially predict school grades and college plans (positive outcomes); and being disciplined in school, skipping school, and suspension (negative behaviors/outcomes) by special education status. Linear models were used for continuous outcome variables (school grades) and logistic

regression models were used for dichotomous outcome variables (college plans, being disciplined in school, skipping school and suspension). Each model included an educationally relevant outcome variable predicted by one of the SEL skills and supports, special education status and included the interaction term.

Results

Students who receive special education services are less likely to have college goals, and more likely to skip school, be sent to the office for discipline, and be suspended (Table 1). This evidence supports trends identified in national studies summarized in the Perspectives section.

Table 1
Proportion of Students with each Outcome by Education Status

	General education	Special education
Has 2- or 4-year college plans	.81	.59
Skipped school in last 30 days	.09	.18
Sent to office for discipline in last 30 days	.08	.18
Suspended in last 30 days	.03	.09

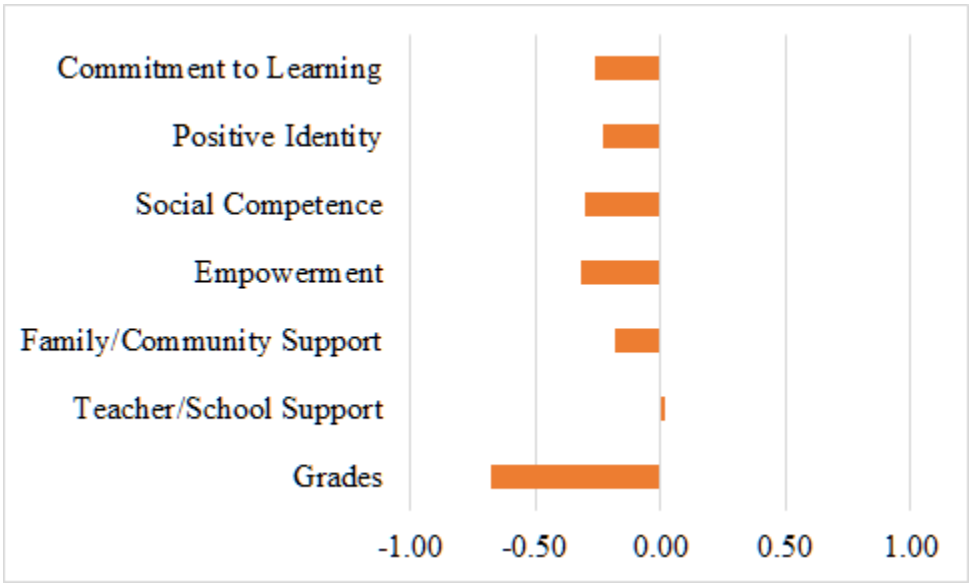
Note. Questions regarding college plans and skipping school were not asked of students in grade 5. Of the 168,733 students, 10.4% received special education services or had an IEP.

The means for all developmental skills and supports are lower for students who receive special education services, generally about one-fourth of a standard deviation lower, except teacher and school support, where students in both groups report the same level (Table 2, Figure 1). Students receiving special education services reported a mean grade point average (GPA) of 2.62, more than 0.6 points lower than students receiving no special education services (M = 3.25). This reflects the academic challenges of students who receive special education services and is an expected finding given that academic challenges are requisite for qualifying for special education services in many disability categories.

Table 2
Standardized Mean Differences for Key Measures of Students in SpEd and Non-SpEd

	M (SpEd)	*M* (Non-SpEd)	Total *SD*	*d*
Commitment to learning	11.88	12.28	1.56	-0.26
Positive identity & outlook	10.81	11.24	1.85	-0.23
Social competence	10.95	11.44	1.64	-0.30
Empowerment	11.97	12.57	1.91	-0.31
Family/community support	12.09	12.42	1.87	-0.18
Teacher/school support	12.12	12.07	2.32	0.02
Grades	2.62	3.25	0.93	-0.68

Figure 1
Standardized Mean Differences for Developmental Skills and Supports and Grades



Note. Values are based on Cohen's *d* (found in Table 2, number of standard deviations different) for students in special education compared to students not receiving special education services.

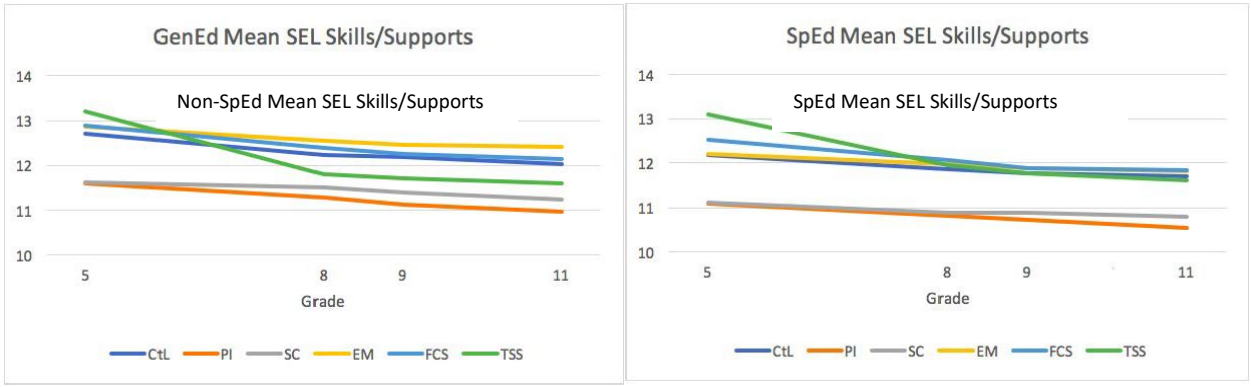
Developmental Levels across Grades

All skills and supports decrease somewhat for students from 5th to 11th grade; most notably teacher and school support and commitment to learning decrease from 5th to 8th grade. This likely reflects the common challenges experienced by students in the transition from primary to secondary school. Additionally, students who receive special educations services report slightly higher teacher and school support than those who do not receive special education services in grades 8 to 11.

For the remaining five SEL measures, students receiving special education services report lower levels of skills and supports across grades but follow similar developmental trends as those who do not receive services (see Figure 2).

Figure 2

Mean Scores on Developmental Skills and Supports across Grades for Students in General Education and Special Education



Note. To aid in reading the displays, for Non-SpEd, the measures at grade 11 are ordered from top to bottom as EM, FCS, CtL, TSS, SC, and PI. For SpEd at grade 5, measures are ordered from top to bottom as TSS, FCS, EM, CtL, and at grade 11 SC is slightly higher than PI.

Differential Prediction

To explore possible differential prediction of important educational outcomes, we regressed each outcome on each developmental skill and support, examining the interaction with special education status, which indicates differential prediction – the measure differentially predicts IUA relevant outcomes.

The linear regression coefficients reported in Table 3 are consistent with general expectations; students who receive special education services have lower (self-reported) school grades (negative SpEd status coefficients). Although three of the interaction terms are significant (due to large samples), they are small. The largest is regarding commitment to learning (CtL) at .122; the association (slope) between CtL and school grades depends on students SpEd status – the standardized slope is slightly higher for students who receive special education services (.374 + .122 = .496), indicating that although students in with special education services achieve lower grades in school, the positive effect of commitment to learning is stronger for these students. There is a small negative differential prediction for social competence and a small positive differential prediction for teacher and school support relative to students in general education; this indicates social competence has a slightly smaller effect on grades for students receiving special education services and teacher/school support has a slightly larger effect on grades.

Table 3
Regression Results of School Grades on Developmental Skills & Supports and SpEd Status (Standardized Coefficients)

	B (measure coefficient)	*B* (SpEd status coefficient)	*B* (interaction coefficient)	R^2
Commitment to learning	0.370*	-0.300*	0.122*	.184
Positive identity and outlook	0.245*	-0.159*	-0.034	.102
Social competence	0.301*	-0.102*	-0.080*	.131
Empowerment	0.270*	-0.172*	-0.011	.115
Family/community support	0.228*	-0.178*	-0.018	.095
Teacher/school support	0.229*	-0.283*	0.075*	.098

* $p<.001$.

The logistic regression odds ratios reported in Table 4 are consistent with expectations; students with higher levels of SEL are more likely to have college plans. Students who receive special education services are less likely to have college plans controlling for CtL, but more likely to have college plans controlling for PIO. The differential prediction coefficients (interactions between SEL measures and SpEd status) are negligible, yet indicate that the positive effect of SEL is slightly lower for students who receive special education services (odds ratios less than 1.0).

Table 4
Regression Results of College Plans on Developmental Skills & Supports and SpEd Status (Odds-Ratios)

	B (measure coefficient)	*B* (SpEd status coefficient)	*B* (interaction coefficient)	R^2
Commitment to learning	1.497*	0.570*	0.875*	.106
Positive identity and outlook	1.193*	1.505*	0.944*	.057
Social competence	1.389*	0.717	0.886*	.087
Empowerment	1.276*	1.080	0.927*	.078
Family/community support	1.250*	0.691	0.888*	.068
Teacher/school support	1.179*	1.262	0.928*	.061

Note. Nagelkerke R^2 is reported. * $p < .001$.

The SEL measures have smaller correlations with negative educational behaviors and outcomes. The correlations are small with the following behaviors/outcomes occurring over the last 30 days: skipped school from .15 (FCS) to .20 (CtL), sent to the office for discipline from .11 (PI) to .20 (CtL), and suspended from .06 (PI) to .10 (CtL). Although these are less common outcomes, they are salient to educational leaders due to their broad negative impacts; these outcomes are two to three times more likely for students who receive special education services (Table 1).

In Table 5, students with higher levels of SEL are less likely to skip school (odds ratios less than 1.0), whereas students receiving special education services are just as likely to skip school when controlling for PI, EM, and TSS (non-significant SpEd status effects); otherwise more likely to skip school. The differential prediction coefficients (interactions) are small yet indicate that SEL has a less positive impact on skipping school for students with special education services (since interaction coefficients are greater than 1.0, counteracting the measure coefficients which are less than 1.0). This indicates that for students receiving special education services, increases in SEL is less likely to reduce skipping rates, but only slightly so; SEL is associated with lower likelihood of skipping school for all students, but less so for students receiving special education services.

Table 5
Regression Results for Skipped School in the last 30 Days on Developmental Skills & Supports and Special Education Status (Odds-Ratios)

	B (measure coefficient)	*B* (SpEd status coefficient)	*B* (interaction coefficient)	R^2
Commitment to learning	0.608*	2.995*	1.160*	.092
Positive identity and outlook	0.766*	1.500	1.106*	.048
Social competence	0.616*	3.695*	1.194*	.092
Empowerment	0.723*	1.499	1.089*	.067
Family/community support	0.728*	2.213*	1.133*	.059
Teacher/school support	0.752*	1.146	1.084*	.073

Note. Nagelkerke R^2 is reported. * $p < .001$.

Similarly, in Table 6, students with higher levels of SEL are less likely to be sent to the office for discipline, whereas students in the special education group are just as likely to be sent to the office for discipline controlling for PI, EM, FCS, TSS; otherwise more likely to be sent to the office for discipline. All differential prediction coefficients (interactions) are small but greater than 1.0; although higher levels of SEL are generally associated with lower likelihood of being sent to the office for discipline, SEL has less impact on discipline outcomes for students who receive special education services.

Table 6
Regression Results for Sent to the Office for Discipline in the last 30 days on Developmental Skills & Supports and SpEd Status (Odds-Ratios)

	B (measure coefficient)	*B* (SpEd status coefficient)	*B* (interaction coefficient)	R^2
Commitment to learning	0.615*	2.226*	1.153*	.096
Positive identity and outlook	0.826*	0.738	1.057*	.040
Social competence	0.626*	2.754*	1.187*	.093
Empowerment	0.768*	0.888	1.063*	.058
Family/community support	0.803*	1.020	1.081*	.045
Teacher/school support	0.759*	0.799	1.070*	.082

Note. Nagelkerke R^2 is reported. * $p < .001$.

Finally, in Table 7, once again, students with higher levels of SEL are less likely to be suspended, whereas students in the special education group are just as likely to be suspended when controlling for PIO, EM, FCS, TSS; otherwise more likely to be suspended. The differential prediction coefficients are again small, although CtL and SC are larger than most of the others across outcomes, indicating that the positive effects of SEL are less so for students with special education services.

Table 7
Regression Results for Suspended in the last 30 Days on Developmental Skills & Supports and SpEd Status (Odds-Ratios)

	B (measure coefficient)	*B* (SpEd status coefficient)	*B* (interaction coefficient)	R^2
Commitment to learning	.585*	3.472*	1.231*	.093
Positive identity and outlook	.793*	.830	1.100*	.049
Social competence	.592*	2.819*	1.225*	.097
Empowerment	.716*	1.271	1.125*	.069
Family/community support	.754*	1.420	1.141*	.056
Teacher/school support	.731*	.856	1.108*	.085

Note. Nagelkerke R^2 is reported. * $p < .001$.

Discussion

Although there are differences in levels of developmental skills and supports, students who receive special education services and those who do not follow similar trends across grades. Students receiving special education services report similar levels of TSS as their peers, indicating that efforts of schools and teachers to include and support these students appear to be effective. This is notable given that students in special education report lower scores than students in general education in all other skills and supports.

Developmental skills and supports predict other education outcomes for all students similarly, regardless of special education status. Generally, special education status moderates and reduces the positive effects of social emotional learning skills and supports. This finding is somewhat concerning as it suggests that higher levels of SEL skills in students receiving special education services are less likely to be positively associated with other important education outcomes. Although this study is cross-sectional and not longitudinal nor causal, this may reduce the effectiveness of increases in SEL skills relative to other outcomes (although the evidence here is not causal). This finding requires further investigation and does not suggest reducing the focus on improving SEL skills and supports in special education but does indicate that more research is needed on how SEL interacts with other factors in producing student outcomes. One potential confounder could be inequitable decision making by educators (factors leading to students being sent to the office for discipline or suspended, and factors leading to the encouragement of students to have college goals, for example).

Due to the limited and semi-fixed nature of the survey questions, as well as challenges with students' ability to self-identify disability categories, we lack information on disability category and are not likely to have this information in future administrations of the Minnesota Student Survey. A relevant limitation of this study is the fact that students with IEPs vary greatly in a number of important ways. However, we have a large samples and multiple measures of SEL and educational outcomes and behaviors; these findings are generally representative of the population of special education students statewide in Minnesota.

Future research areas may include examinations into special education categories and the intersectionality of students' special education status and membership status of other marginalized groups. Additionally, research targeting the mechanisms by which SEL effects positive and negative student outcomes may provide insights for differences in group outcomes. Finally, an investigation of measurement invariance and other technical features would be well justified to provide validity evidence that these measures are indeed measuring the same constructs when applied to special education and non-special education populations.

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