

Examining the Impact of Promoting Student Self-Determination and Utilizing Teacher Coaching Supports in Inclusive, Secondary Classrooms

By
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Abstract

The five chapters of this dissertation align with the overall theme of promoting student self-determination and examining the use of coaching interventions in inclusive, secondary classrooms, with a particular focus on how coaching can enhance general and special educators' practices to provide *all* students with opportunities and experiences to enhance self-determination. Chapter 1 provides an overview of the construct of self-determination, coaching supports, and a brief introduction to goal setting and attainment in promoting self-determination for students with and without disabilities. Chapter 1 also introduces the research questions addressed across all chapters of this dissertation. Chapter 2 provides a review of coaching intervention research in inclusive, secondary classrooms. The results of this review demonstrated a critical need to expand the quality and quantity of intervention research on coaching supports provided in inclusive, secondary classrooms, including (a) a need for more studies that examine coaching interventions in inclusive, secondary classrooms, (b) improved reporting on the intervention context and associated outcomes, and (c) enhanced rigor in reporting the outcomes of coaching interventions on implementers (e.g., general and special education teachers) and students. As the research base grows on coaching interventions used in inclusive, secondary classrooms, further analyses can address gaps in the knowledge base related to characteristics of effective coaching interventions that lead to enhanced student and implementer (e.g., general and special education teacher) outcomes. Chapter 3 focuses on examining goals set by students with and without disabilities engaging in an evidence-based practice designed to promote self-determination, the *Self-Determined Learning Model of Instruction* (SDLMI), in inclusive, secondary classes. In addition to examining the academic skills targeted across student-selected goals, Chapter 3 also explores the impact of disability

status as well as the level of support provided to teachers to implement the SDLMI on goals set by students receiving SDLMI instruction. Specifically, the analysis in Chapter 3 utilized data from a large-scale randomized control trial (RCT) in which randomization at the school-level resulted in two implementation support groups: (a) teachers who received access to SDLMI online modules disseminated twice a month (i.e., online supports group) and (b) teachers who received access to the SDLMI online modules as well as in-person, monthly coaching from a trained SDLMI coach (i.e., online supports + in-person coaching supports group). Findings suggested that the vast majority of goals set by students in inclusive, general education classes focused on academic learning and minimal differences across goals set by students with and without disabilities and across teacher implementation support groups. Chapter 4 examines the impact of the SDLMI on student self-determination outcomes when implemented in inclusive, secondary core content classrooms as a universal (i.e., Tier 1) support across an academic year. The findings suggest relatively small change in overall self-determination during the first year of a multi-year study, but interesting patterns of change were replicated across students with and without disabilities. These patterns suggest the utility of adding a mid-year data collection timepoint in future research to allow for more nuanced detection of changes in self-determination. Chapter 5 provides a final discussion of overall findings and directions to inform future research and practice.

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Chapter 1: Introduction

Within both the general and special education fields, promoting self-determination – that is, supporting students to develop abilities that enable them to act or cause things to happen as they set and works toward goals – has been increasingly emphasized as a mechanism through which teachers can enhance academic motivation and engagement (Niemic & Ryan, 2009; Shogren, Kennedy, et al., 2014). Further, evidence of the relationship between instruction in skills associated with self-determination coupled with experiences and opportunities to practice those skills and positive student outcomes has accumulated over the past 30 years (Algozzine et al., 2001; Burke et al., 2018). Specifically, instruction in abilities associated with self-determination has been linked to enhanced academic goal attainment (Raley et al., 2018; Raley et al., 2020; Shogren et al., 2012), advanced transition knowledge and skills (Wehmeyer et al., 2011), improved employment outcomes (Dean et al., 2017), and increased community access (Shogren, Wehmeyer, Palmer, Rifenbark, et al., 2015). However, to effectively use evidence-based practices, such as those designed to enhance self-determination, identifying and providing systematic supports for implementation in school contexts are critically important (Fixsen et al., 2005).

Given the significant relationship between self-determination and positive school and postschool outcomes, the overall aim of this dissertation is to explore how instruction to promote student self-determination across students with and without disabilities as well as coaching provided to teachers in inclusive, secondary contexts results in enhanced student outcomes. To achieve this overall aim, this dissertation presents three studies: (a) a review of existing research that investigates the impact of coaching supports provided to school-based implementers (e.g., general and special education teachers, paraprofessionals) in inclusive, secondary classrooms, (b)

a content analysis of the types of goals set by secondary students with and without disabilities in inclusive, general education classrooms as part of an intervention to promote self-determination, the *Self-Determined Learning Model of Instruction* (SDLMI; Shogren, Raley, et al., 2018; Wehmeyer et al., 2000), implemented by general and special education teachers who are receiving varying types of implementation supports (e.g., online supports versus online support + in-person coaching) and (c) an analysis of the impact of implementing the SDLMI on student self-determination outcomes over the course of an academic year.

The theoretical framework that underlies this dissertation is Causal Agency Theory. This theory defines self-determination as a

...dispositional characteristic manifested as acting as the causal agent in one's life. Self-determined people (i.e., causal agents) act in service to freely chosen goals. Self-determined actions function to enable a person to be the causal agent in his or her life.

(Shogren, Wehmeyer, Palmer, Forber-Pratt, et al., 2015, p. 258)

In educational contexts, students who are self-determined make or cause things to happen in their lives by setting and going after goals based upon their interests and preferences. Therefore, to act in self-determined ways, students use specific abilities to make progress toward their goals, including choice making, decision making, problem solving, goal setting and attainment, planning, self-management, self-advocacy, self-awareness, and self-knowledge. As a developmental construct, self-determination develops across the lifespan as students have multiple experiences and opportunities to engage in goal-directed action (Shogren, Wehmeyer, Palmer, Forber-Pratt, et al., 2015). Therefore, it is critically important we understand ways to effectively enable teachers to (a) teach abilities and skills associated with self-determination, (b) provide opportunities for students to use and practice those abilities and skills, and (c)

collaborate with students to identify supports and accommodations, as needed. To enable teachers to shift their teaching practices and provide opportunities for students to engage in self-determined actions, examining the impact of specific implementation supports (e.g., teacher coaching) is highly relevant to effective implementation.

Coaching Supports

Adoption and high fidelity of implementation of evidence-based practices is more likely with sustained, systematic implementation supports based on the tenets of implementation science (Fixsen et al., 2005; Odom et al., 2014). The National Implementation Research Network (NIRN) defines implementation as a set of activities designed to put an intervention or program in practice (Fixsen et al., 2005). These activities include “mechanisms to develop, improve, and sustain one’s ability to implement an intervention as intended” (Fixsen et al., 2013, p. 220), which include ongoing implementation supports (e.g., in-person coaching provided to teachers). As such, fully understanding how ongoing supports, such as coaching, have been provided in inclusive, secondary contexts is critically needed to inform future research and practice related to interventions designed to promote student self-determination.

Coaching has been identified as an essential feature of effective professional development that supports teachers’ abilities to translate knowledge and skills into classroom practice (Joyce & Showers, 2002). Coaching is characterized by “an observation and feedback cycle in an ongoing instructional or clinical situation” (Joyce & Showers, 1981, p. 170). To describe how coaching intervention supports have been used in inclusive, secondary classrooms, Chapter 2 involves a review of existing empirical studies that have examined the impact of coaching supports in inclusive, secondary contexts on implementer (e.g., general and special education teachers) and student outcomes. Although a recent meta-analysis on the impact of

teacher coaching on classroom instruction and student achievement has been conducted (Kraft et al., 2018), there has not been a focused review on coaching in inclusive, secondary classrooms. Given the increasing use of self-determination interventions in such contexts, this review of the research informs research and practice in this area. Specifically, Chapter 2 examines (a) key features of coaching interventions (e.g., coaching framework, dosage) when utilized in inclusive, secondary settings, (b) characteristics of classroom contexts in which coaching supports have been provided (e.g., grade level, implementer role [e.g., general or special education teacher]), (c) rigor of the research evaluating coaching interventions based on quality indicators established by the Council for Exceptional Children (CEC; 2014), and (d) student and implementer outcomes as a result of coaching provided in inclusive, secondary classrooms. Finally, Chapter 2 includes recommendations of areas that should be explored in future research to guide the utilization of coaching supports in inclusive, secondary contexts. Research questions that guide Chapter 2 are provided at the end of this chapter.

Academic Goal Setting

After examining the impact of coaching supports in inclusive, secondary contexts in Chapter 2, the focus of Chapter 3 is on identifying the types of goals that secondary students with and without disabilities set while receiving self-determination intervention, specifically instruction using the SDLMI, in inclusive, secondary classrooms. This analysis informs the types of coaching supports that may be most useful to teachers, based on the types of goals students set during self-determination interventions. Goal setting is the process through which a person creates an action plan for something they want to accomplish or achieve (Sands & Doll, 2000). Goal setting is frequently embedded in interventions designed promote self-determination, such as the SDLMI (Shogren, Raley, et al., 2018; Wehmeyer et al., 2000). As a

model of instruction, the SDLMI is designed to enable educators to support students to actively direct their learning by engaging in a process to set and go after goals, solving problems encountered as they take actions to achieve their goals and evaluating their progress and making adjustments, as needed. Unlike stand-alone curricula which target specific content, a model of instruction can be overlaid on any curricular area, including core content curricula. Since its initial introduction to the field (Wehmeyer et al., 2000), an array of research has demonstrated the efficacy of the SDLMI for enabling students to (a) set educationally relevant and valued goals, (b) create an action plan to achieve those goals, and (c) evaluate progress toward those goals, revising the action plan or goal as necessary (Hagiwara et al., 2017). While goal setting is central to SDLMI, there is limited research on the content of the goals that students choose using the SDLMI, particularly in inclusive, secondary classrooms where students are learning core content.

In recent years, frameworks of college and career readiness as well as national instructional standards have underscored the importance of abilities associated with self-determination (e.g., choice making, problem solving, goal setting and attainment; Morningstar et al., 2012; National Research Council, 2012; NGSS Lead States, 2013). Further, leaders in the fields of self-determination and multi-tiered systems of support (MTSS) have identified a need for research examining the impact of instruction to promote abilities and skills associated with self-determination as a universal support in inclusive, general education classrooms that would benefit *all* students (Shogren et al., 2016). However, the majority of empirical research that has investigated the impact of the SDLMI has targeted students with disabilities when they are not learning in inclusive contexts (Hagiwara et al., 2017). Additionally, other researchers have found that students with disabilities often do not set academic-related goals (Kleinert et al.,

2014). Therefore, the purpose of Chapter 3 is to analyze the goals ($n = 774$) set by secondary students with and without disabilities learning inclusive, secondary classrooms as they use the SDLMI during the first academic semester as part of a longitudinal, randomized controlled trial (RCT) examining the impact of varying types of supports (i.e., online supports versus online + coaching) for teachers implementing the SDLMI.

Chapter 3 provides guidance to the field on the types of goals students set when using the SDLMI in inclusive, core content classes and the degree to which the goals students choose relate to academic learning. To address the Chapter 3 research questions (provided at the end of this chapter) on the types of goals set by students with and without disabilities using the SDLMI, a directed approach to content analysis with both inductive and deductive category development was utilized (Hsieh & Shannon, 2005). First, all 774 goals were reviewed to develop initial codes for the primary goal areas (e.g., academic, extracurricular, social). Second, each goal was categorized in a primary goal area, and subcategories were developed within each goal area based on content and finalized after all goals were reviewed, consistent with the inductive approach to category development (Kondracki et al., 2002). Third, student goals were assessed based on their relevance to (a) the class content in which the SDLMI is implemented (e.g., create specific study guides for English Language Arts exams), (b) general academic skills that would support student achievement across multiple classes (e.g., use guided notes across classes), and (c) general skills that would prepare students to engage in learning (e.g., go to sleep at a certain time to attend first class). Fourth, potential differences in selected goal areas based on student disability status ($n = 133$ students were identified as having an Individualized Education Program [IEP] from district data; 17.2%) were explored, as well as differences based on the degree to which the provision of coaching supports affected students' goal area selection. Examining

goals by their relevance to academic learning informs future research and practice related to students' goal interests while engaging in the SDLMI in inclusive, general education contexts. Furthermore, Chapter 3 provides additional guidance for the individualized instruction and coaching supports for teachers implementing the SDLMI based on student-selected goal areas in core content secondary classrooms.

Self-Determination and the SDLMI

To examine potential differences in student self-determination, Chapter 4 consists of a longitudinal, panel analysis of change in student self-determination over an academic year when the SDLMI is utilized in inclusive, general education classrooms at the secondary level. Researchers have identified differences in student self-determination based on disability status (Shogren et al., 2019); specifically, students without disabilities consistently reported higher self-determination compared to adolescents with disabilities, suggesting differential opportunities and supports for self-determination exist within student support systems (e.g., schools). These recent findings aligned with previous research that has suggested an effect of disability on student self-determination (Shogren, Plotner, et al., 2014; Shogren & Shaw, 2017), reinforcing the ongoing need to promote self-determination of students with disabilities in educational contexts using evidence-based practices, such as the SDLMI. Thus, the purpose of Chapter 4 is to examine change in student self-determination over an academic year as a function of SDLMI implementation in inclusive, general education classes, as well as to determine if disability moderates the relationship between SDLMI implementation and student outcomes.

The data utilized in this analysis were collected during the 2018-2019 academic year across six high schools in the Mid-Atlantic as part of a longitudinal, RCT. In this first project year, 992 students with and without disabilities received SDLMI instruction from general ($n =$

12) and special education teachers ($n = 5$) across English Language Arts ($n = 20$) or Science ($n = 16$) classes. The majority of student participants were enrolled in ninth grade ($n = 951$, 95.9%) and approximately 19.0% ($n = 189$) were identified as having a disability based on district data. Information on student self-determination were collected using the *Self-Determination Inventory: Student Report* (SDI:SR; Shogren & Wehmeyer, 2017). The SDI:SR is a validated self-report measure aligned with Causal Agency Theory (Shogren, Wehmeyer, Palmer, Forber-Pratt, et al., 2015) and students took the SDI:SR at the beginning, middle, and end of the academic year in this study. The SDI:SR has demonstrated reliability for youth and adolescents aged 13 to 22 with a range of disability labels (i.e., no disability, learning disabilities, intellectual disability, autism spectrum disorders, other health impairments) and races/ethnicities (i.e., White/European American, African American/Black, Hispanic/Latinx, Other; Shogren, Shaw, et al., 2018). Students provided responses to each of the 21 items of the SDI:SR via an online platform that utilizes a slider scale that the computer scores between 0 (Disagree) and 99 (Agree). The custom online system includes embedded accessibility features (e.g., in-text definitions, audio playback). At each timepoint (three in total), the SDI:SR took students approximately 10 minutes to complete.

Although previous analyses of student self-determination as measured by the SDI:SR have demonstrated a small effect of the intervention on change in student with and without disabilities' self-determination (Raley et al., 2018), significant variability across students has also been found (Raley et al., 2020). Further, previous research has generally measured self-determination at the beginning and end of an academic year (pre/post assessment; e.g., Shogren et al., 2019; Wehmeyer et al., 2012), limiting the ability to examine changes in self-determination mid-year across students with and without disabilities. These findings suggested a

need to further examine change in student self-determination over time when the SDLMI is implemented in inclusive, general education classrooms and the moderating impact of student disability status. Results from Chapter 4 suggested that three data collection points throughout an academic year allow for a greater understanding of the mid-year impacts of self-determination interventions. Specifically, while self-determination status at each timepoint predicts self-determination status at a later time point, there are trends in the data that do not suggest a completely linear growth pattern. The data suggested small decreases in self-determination scores from the beginning to the middle of the year across students with and without disabilities. By the end of the year, however, self-determination scores rose back to near baseline levels. While these differences are relatively low in their effect sizes when looking at the overall data, they are significant in the multi-group model across students with and without disabilities. Chapter 4 contributes to theory and practice related to self-determination as it informs the field on how to utilize self-determination assessment to detect change and the benefits of implementing the SDLMI as a Tier 1 intervention in inclusive, general education classrooms to guide future work on identifying the most effective implementation supports (e.g., coaching) for teachers implementing the SDLMI in inclusive contexts.

Purpose

Given the importance of enhancing student self-determination for all students in inclusive, secondary classrooms and exploring implementation supports for teachers using the SDLMI, the focus of this dissertation was (a) to examine the impact of coaching supports provided to teachers of secondary students with disabilities in inclusive settings in existing research, (b) to understand the types of goals secondary students with and without disabilities choose to set while their teachers support them using the SDLMI across varying implementation

support conditions, and (c) to analyze the change in student self-determination over the course of an academic year and the moderating impact of disability status on the relationship between SDLMI implementation and student self-determination. In Chapters 2, 3, and 4, respectively, the following research questions are addressed:

Chapter 2

1. How have coaching interventions (e.g., coaching framework, dosage) been implemented in inclusive, secondary classrooms in existing research?
2. What are the characteristics of students (e.g., grade level, disability categories), implementers (e.g., general or special education teachers, years of experience), and coaches (e.g., role within the school, previous training) in studies that used coaching interventions in inclusive, secondary classrooms?
3. What is the rigor of the body of research on coaching interventions based on quality indicators established by the Council for Exceptional Children (CEC; 2014)?
4. What are the student and implementer outcomes of the coaching interventions implemented in inclusive, secondary classrooms?

Chapter 3

1. What academic skills were targeted across goals set by students who were receiving SDLMI instruction in inclusive, secondary classrooms?
 - a. To what degree were goals set by students receiving SDLMI instruction in inclusive, secondary classrooms related to the content area of the class and/or general academic skills?

- b. What was the impact of disability status, as indicated by having an Individualized Education Program (IEP), on goals set by students receiving SDLMI instruction in inclusive, secondary classrooms?
- c. What was the impact of the level of support provided to teachers to implement the SDLMI (e.g., coaching versus no coaching) on the student-selected goal areas?

Chapter 4

1. To what degree does student self-determination change across an academic year when students engage in the SDLMI in inclusive, secondary classrooms?
2. What is the moderating impact of disability status on the relationship between SDLMI implementation and student self-determination?

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Chapter 2: A Review of Existing Research on Coaching in Inclusive, Secondary Classrooms

The adoption, utilization, and implementation of evidence-based practices (EBPs) in school systems is enhanced with sustained, systematic supports (Fixsen et al., 2005; Odom et al., 2014). To identify supports that enhance fidelity of implementation, the field of implementation science has provided guidance. Implementation science refers to the “methods or techniques used to enhance the adoption, implementation, and sustainability” of an intervention (Powell et al., 2015). To conceptualize the ingredients that lead to positive outcomes within the implementation science framework, the National Implementation Research Network (NIRN) utilizes the Active Implementation Formula (Metz et al., 2017), which provides a high-level perspective of the factors that are necessary to achieve socially significant outcomes:

$$\textit{Effective Practices} \times \textit{Effective Implementation} \times \textit{Enabling Context} = \\ \textit{Improved Outcomes}$$

Effective practices refer to the EBPs that are identified to meet the need for enhancing outcomes and are feasible to implement in a given context. *Effective implementation* includes components that contribute to an intentional and visible infrastructure that supports successful practices and fidelity. *Enabling context* refers to the condition of the system as a whole, including collaborative activities among teams, communication networks, and iterative use of data. The implementation science framework emphasizes the importance of “mechanisms to develop, improve, and sustain one’s ability to implement an intervention as intended” (Fixsen et al., 2013, p. 220), including building a competent team of implementers that have the knowledge, skills, and abilities to use EBPs with fidelity and ensuring they have sustainable support (NIRN, 2015). In school contexts, these mechanisms can include ongoing implementation supports (e.g., coaching provided to teachers) designed to help implementers in using the EBP as intended.

Coaching has been identified as an essential support to enhance implementers' abilities to translate knowledge and skills into classroom practice (Joyce & Showers, 2002). Joyce and Showers (1981) defined coaching as "an observation and feedback cycle in an ongoing instructional or clinical situation" (p. 170). Over time, there has been differentiation of coaching types and functions in school contexts (e.g., literacy coaches, leadership coaches, instructional coaches; Knight, 2011). For example, instructional coaches "partner with teachers to help them incorporate research-based instructional practices into their teaching" (Knight, 2009, p. 30). Effective instructional coaches skillfully communicate with implementers (e.g., general and special education teachers) to build relationships centered around trust. Further, instructional coaches encourage implementers to reflect on their teaching practices, set professional goals, and create action plans to achieve those goals (Knight, 2009). Coaching is not only theoretically aligned with improved outcomes per the implementation science framework, but a recent meta-analysis of studies that examined the impact of coaching on classroom instruction identified a large positive effect of coaching on teachers' instructional practice (Kraft et al., 2018). Kraft et al. (2018) also found that the enhanced instructional practices resulting from coaching led to improved student performance on standardized measures, when such data was collected, across ages and grade levels (e.g., early childhood, elementary, secondary). However, 85% of the research reviewed by Kraft et al. (2018) took place in early childhood and elementary school contexts, suggesting a need for more research on coaching within secondary schools.

However, implementing EBPs and delivering coaching in secondary schools is complex. For example, leaders in the field of Response to Intervention (RTI) have suggested the need to consider unique issues when implementing at the secondary level, including (a) instructional organization (e.g., complex school schedules), (b) the focus on graduation requirements (e.g.,

creating a need for interventions that support credit accrual), and (c) implementation alignment (e.g., extent to which interventions complement numerous other initiatives and activities at the secondary level; National High School Center, National Center on Response to Intervention, and Center on Instruction, 2010). Further, coaching general and special education teachers to work collaboratively to use EBPs in inclusive, secondary classrooms, introduces additional complexities. Data continue to suggest that access to the general education classroom and curriculum for students with disabilities is a major challenge, especially at the secondary level (U.S. Department of Education, 2012). Leaders in the field of special education and school systems change have identified a critical need for research focused on delivering instruction in inclusive, general education classrooms to support students with and without disabilities (McCart et al., 2014; Sailor, 2017).

Inclusive education provides students with disabilities opportunities to learn alongside their peers without disabilities in general education classes, with the needed supports from team members (e.g., general or special education teachers, paraprofessionals) who collaborate to plan for the student (Downing & Peckham-Hardin, 2007). Research consistently demonstrates that when students with disabilities are included in general education classes, their learning is more aligned with grade-level content and standards and their engagement in learning content is enhanced (Kurth & Mastergeorge, 2012; Matzen et al., 2010; Soukup et al., 2007). Researchers have also documented the positive impact of inclusive education on students without disabilities (Ryndak et al., 2013). Kalamouka et al. (2007) conducted a systematic review of research examining the impact of placement of students with disabilities in general education classrooms on the academic (e.g., changes in academic standardized measure scores) and social (e.g., quantity and quality of friendships) outcomes of students without disabilities and found that 81%

of the outcomes across 26 studies reported positive or neutral effects. To implement inclusive practices, particularly at the secondary level, “a system of *structural elements* that ensure effective instruction and high-quality interventions are readily available for all students, regardless of learning style, disability, or risk factors” (McCart et al., 2014). To this end, Sailor and colleagues (2006) found that the implementation of a comprehensive school reform process, involving general and special educators, that coordinates and evaluates intervention supports for the benefit of *all* students positively affected academic and social progress of students with and without disabilities who participated standardized academic assessments.

To implement effective practices to promote inclusive education, with a particular focus on secondary classrooms, coaching is a critical element, consistent with the Active Implementation Formula. However, as noted, little specific focus has been directed to understanding effective coaching interventions for school personnel (e.g., general and special education teachers, paraprofessionals) implementing EBPs in inclusive, secondary classes that support students with and without disabilities. Given that (a) secondary classroom contexts require unique planning for EBP implementation to address specific issues (e.g., complex schedules) and (b) inclusive classrooms necessitate teachers be prepared to differentiate instruction to support students with a broad range of support needs, a review of what is currently known about using coaching interventions in inclusive, secondary classes is needed to guide future research and practice. Therefore, this paper will review empirical studies that examined the impact of coaching interventions delivered in inclusive, secondary classrooms to address the following research questions:

1. How have coaching interventions (e.g., coaching framework, dosage) been implemented in inclusive, secondary classrooms in existing research?

2. What are the characteristics of students (e.g., grade level, disability categories), implementers (e.g., general or special education teachers, years of experience), and coaches (e.g., role within the school, previous training) in studies that used coaching interventions in inclusive, secondary classrooms?
3. What is the rigor of the body of research on coaching interventions based on quality indicators established by the Council for Exceptional Children (CEC; 2014)?
4. What are the student and implementer outcomes of the coaching interventions implemented in inclusive, secondary classrooms?

Method

Inclusion Criteria

There were four criteria used to identify articles to be included in this review. First, studies had to be published in an English-language, peer-reviewed journal. Second, studies had to be conducted in a secondary (i.e., middle or high) school. For example, studies conducted with adults with disabilities in community settings (e.g., work, home) were not included. Third, at least some part of the coaching intervention had to take place in an inclusive, secondary classroom (defined as students with and without disabilities being included in the classroom). Studies that included multiple settings, such as inclusive and segregated classroom settings, were included so long as some part of the coaching intervention was delivered in an inclusive setting. Fourth, studies had to report student and/or implementer (e.g., general or special education teacher, paraprofessional) outcomes in relation to the coaching intervention.

Search Procedures and Article Selection

To identify articles that met the inclusion criteria, a systematic search process was used. First, we conducted separate searches in two social science databases, ERIC and PsycINFO, for

peer-reviewed articles using the following search terms: “coaching,” “secondary,” “includi*” or “disabilit*.” The search of ERIC yielded 61 articles, and the search of PsycINFO yielded 21 articles with no overlap. Second, an ancestral search of the references of the 82 articles identified in ERIC and PsycINFO was conducted to identify any additional articles. The ancestral search did not yield any additional articles. Next, the first author reviewed each full article to confirm it met inclusion criteria. The majority of articles ($n = 53$; 64.6%) despite being identified in the search did not report any data on the outcomes of the coaching intervention, and these articles were eliminated. Out of the 29 articles that remained, 17 studies (58.6%) did not deliver any part of the intervention in an inclusive, secondary classroom. Thus, the final count was 12 articles (marked with * in the References). A postdoctoral researcher with expertise in coaching and inclusive education replicated the search procedures and verified no articles were missed during the search.

Article Coding

Once the search and article identification processes were complete, we first coded the 12 articles across three main dimensions: (a) coaching intervention characteristics, (b) participant (i.e., student, implementer, coach) characteristics, and (c) student and implementer outcomes. The coaching intervention characteristics included (a) setting, (b) intervention length and session duration, (c) research design, (d) utilization of a specified coaching framework, and (e) the targeted EBP. The participant characteristics included coding for student, implementer (e.g., general or special educator, paraprofessional) who received coaching interventions, and coach characteristics. For the student participants category, we coded (a) sample size of students with and without disabilities in the study, (b) age or grade levels, (c) gender, (d) race/ethnicity, and (e) disability. In the implementers category, we recorded (a) sample size, (b) role within the

classroom context (e.g., general or special education teacher, paraprofessional), (c) years of experience (including mean and range reported), (d) gender, (e) race/ethnicity, and (f) class subject. The coach participant category included the same coding variables as the implementer participants, except years of coaching experience was recorded and the role of the coach (e.g., part of research team, teacher colleague) was also coded. We also descriptively recorded the student and implementer outcomes reported by the authors based on the coaching intervention provided.

Quality Indicator Coding

Next, we assessed the rigor of included articles by coding them based on the quality indicators (QIs) established by the Council for Exceptional Children (CEC; 2014) and evaluated by Cook et al. (2015) for group and single-case design studies. QI categories include whether or not adequate information was reported in the study across multiple domains, including (a) context and setting (e.g., inclusive or segregated classroom), (b) participants (e.g., grade level, race/ethnicity), (c) intervention agents (e.g., specific training that implementer received prior to intervention initiation), (d) description of practice (e.g., dosage of intervention), (e) implementation fidelity (e.g., use of a reliable measure of fidelity), (f) internal validity (e.g., comprehensive description of baseline condition), (g) outcome measure/dependent variables (e.g., reported effect sizes or graphed data), and (h) data analysis (e.g., appropriateness of procedures for outcome data collected). Each quality indicator category includes multiple criteria, with 18 criteria applied to both group and single-case designs, with an additional six targeted to group designs, and four to single-case designs. This resulted in a total of 24 criteria that were coded for group designs and 22 for single-case designs. Included articles were individually evaluated to determine if each criterion was not reported ('0') or sufficient

information reported ('1'), following standards established in previous reviews using the CEC (2014) QIs (Royer et al., 2017).

Interrater Reliability

A second reviewer independently coded participant characteristics, coaching intervention characteristics, quality indicators, and reported student and implementer outcomes for all articles. The first author trained the second reviewer (postdoctoral researcher with expertise in coaching and inclusive education) on the developed codebook by reviewing the specific criteria for each code and associated examples provided by the first author. Interrater reliability (IRR) was calculated based on the percentage of agreement (dividing the number of agreements by the total number of coded variables, then multiplying by 100). Overall IRR was 93.2%. Disagreements were discussed by the first author and second reviewer until a consensus was reached. Finally, a master coding sheet was generated to analyze the results and answer the research questions.

Results

A total of 12 peer-reviewed articles met the inclusion criteria. The articles were published across 27 years (i.e., 1992 to 2019; see Figure 1). Four (33.3%) articles were published in 2017 and none of the other included articles were published in the same year. The experimental design across included studies included group design ($n = 6$, 50.0%), single-case design ($n = 5$, 41.7%), and mixed methods ($n = 1$, 8.3%). The sections below are organized around the research questions and Table 1 provides a complete list of included articles and key features of the implementation context.

Coaching Intervention Characteristics

The coaching interventions targeted academic skills or subjects in seven studies (58.3%; e.g., Grossen, 2004) and there was a wide range of academic areas targeted, including English

Language Arts (3 articles, 37.5%; e.g., Weiser et al., 2019), health education (1 article, 12.5%; Tekin-Iftar et al., 2017), mathematics (1 article, 12.5%; Gersten & Kelly, 1992), science (1 article, 12.5%; Kennedy et al., 2017), and multiple academic subjects (1 article, 12.5%; Courtade et al., 2017). Seven studies (58.3%) explicitly stated that coaching was provided to implementers to enhance their implementation of EBPs. For example, Weiser et al. (2019) examined the impact of coaching on teachers' implementation of several EBPs to enhance reading skills (e.g., pre-teaching vocabulary and background knowledge, using words from the text to practice phonemic awareness). Although not explicitly EBPs, two articles (16.7%) focused on broader areas, including coaching implementers to address diversity, equity, and inclusion (Lorenzo, 2014) and to enhance inclusive service delivery for students with disabilities (Pearl et al., 2012).

The coaching intervention dosage was described in three articles (25%; e.g., Duchaine et al., 2011) and there were notable differences in the duration and frequency of the coaching supports provided to implementers, ranging from interventions lasting three weeks (Walker & Snell, 2016) to five years (Pearl et al., 2012). This wide range was influenced by the experimental design, with single-case designs tending to be shorter in duration than group designs, as well as the overall purpose of the intervention studies. Shorter-term coaching interventions utilized within single-case designs tended to target specific skills (e.g., behavior specific praise statements; Duchaine et al., 2011) while longer-term coaching supports were typically utilized in group design studies focused on large-scale professional development programs (e.g., Courtade et al., 2017). The average coaching session length was 26.1 minutes with a range of 5 to 60 minutes. The frequency of coaching ranged from three weekly sessions during an eight-week intervention (Walker & Snell, 2016) to 48 sessions over a three-year study

(Lovett et al., 2008). For example, Walker and Snell (2016) stated that coaching sessions were provided during the intervention phase of a multiple-baseline design study, indicating that the last implementer that started the intervention phase received five fewer coaching sessions compared to the first implementer. The rate of coaching sessions also varied in Lovett et al. (2008) as implementers received coaching support three times during their first month of implementation and then coaching was consistently provided twice a month for the remainder of the intervention. Three studies (25%; e.g., Tekin-Iftar et al., 2017) included a professional development training for implementers on the specific procedures to be implemented before beginning the coaching intervention. The initial professional development for implementers ranged from 45 to 120 minutes ($M = 64.4$ minutes) across the three articles.

Coaching Frameworks

Several coaching frameworks were referenced across included articles. Courtade et al. (2017) utilized a combined framework informed by the Participatory Adult Learning Strategies (PALS; Dunst & Trivette, 2009), the instructional coaching constructs of Knight (2007), and coaching research conducted by NIRN (Fixsen et al., 2005). In this study, coaches received training annually in the overall framework adopted, including components from PALS (e.g., emphasis on active learner involvement in all aspects of training opportunities and learner experiences; Dunst & Trivette, 2009) and the instructional coaching cycle (i.e., set goal and identify strategies, learn how to implement the strategy, and monitor implementation of practice; Knight, 2007). Gersten and Kelly (1992) utilized the coaching model proposed by Showers et al. (1987), which emphasizes specific variables that must be considered before providing staff development (e.g., characteristics of schools and school systems, staff development programs). Grossen (2002) utilized a coaching model described in a previous case study by the same

research team (Grossen & Scott, 2000) in which the coach selects a teaching strategy aimed at improving student performance, models the strategy, observes the teacher incorporating the strategy, and checks if the change in teaching yields a change in student performance. Kennedy et al. (2017) utilized the cognitive apprenticeship model (Brown et al., 1989) in which a teacher receives instructional materials tied explicitly to their curriculum and high-quality models of implementation. To operationalize this, coaches were trained to provide teachers with model via a video platform and then teachers received a feedback/coaching email from the coach after an in-person observation. Weiser et al. (2019) used a “student data-focused coaching process” (Al Otaiba et al., 2008; Foorman & Torgesen, 2001) to enable coaches to collaborate with teachers and use student pre-intervention data to identify an area of need, implement an EBP to address that need, and use progress monitoring data to evaluate the effectiveness in an iterative process throughout a school year.

Intervention Context

The Active Implementation Formula emphasizes the importance of context in the successful adoption of evidence-based interventions (Metz et al., 2017). In school intervention settings, understanding contextual variables is critically important to assess the contextual fit between the practices selected to meet the identified need for intervention (Horner et al., 2014). The following sections describe the extent to which included articles provided information on the intervention context, including characteristics of the student, implementer, and coach participants.

Student Participants

Student participant sample sizes ranged from 3 (e.g., Tekin-Iftar et al., 2017) to 26 (Kennedy et al., 2017) for single-case designs and 452 (Weiser et al., 2019) to 3,920 (Pearl et al.,

2012) for group designs. However, six (50.0%; e.g., Grossen, 2002) of the included studies did not provide the number of student participants or other demographic information (e.g., grade level, gender, race/ethnicity, and disability categories), four (66.7%; e.g., Lorenzo, 2014) of which utilized a group design, one (16.7%; e.g., Gersten & Kelly, 2002) utilized a single-case design, and one utilized a mixed methods approach (16.7%; Lovett et al., 2008).

Although the focus of study was students at the secondary level (i.e., middle and high school), one study (Weiser et al., 2019) included a range of students enrolled in kindergarten to eighth grade, and was therefore retained as it included a subset of secondary students. As noted, only six studies (50%) reported student demographic characteristics, and only four (66.7%; e.g., Walker & Snell, 2016) reported on student gender resulting in an aggregate sample of 339 (65.7%) males and 177 (34.3%) females. The same four articles that reported on student gender were the only studies that included information on student race/ethnicity and across these student samples, the majority of participants identified as Hispanic/Latinx ($n = 266$, 51.2%) followed by African American/Black ($n = 266$, 30.6%), White/European American ($n = 77$, 14.8%), Asian ($n = 5$, 1.0%), and Other ($n = 2$, 0.4%). Race/ethnicity information was reported as missing for four student participants (0.8%) in only one included article (Weiser et al., 2019). Five articles (41.7%; e.g., Tekin-Iftar et al., 2017) provided specific information on student disability categories and the most common disability reported was learning disabilities ($n = 304$, 61.8%) followed by other health impairment ($n = 47$, 9.6%), speech and language impairment ($n = 44$, 8.9%), autism spectrum disorder ($n = 38$, 7.7%), emotional and behavioral disorders ($n = 32$, 6.5%), intellectual disability ($n = 17$, 2.9%), deaf or hard of hearing ($n = 3$, 0.6%), vision disability or blindness ($n = 1$, 0.2%), and two or more disabilities ($n = 2$, 0.4%). The remaining

studies stated that some of the participants had disabilities (consistent with inclusion criteria), but did not explicitly state the disability labels of students.

Implementer Participants

The range in sample sizes of implementers across included articles was 3 (e.g., Walker & Snell, 2016) to 789 (Pearl et al., 2012). The implementer sample size varied based on the type of design as the average sample size for single-case design studies was 3.2 implementers compared to 224 implementers for group design studies. Two articles (16.7%; Grossen, 2002, 2004) omitted information on implementer sample sizes. Walker and Snell (2016) was the only article that included implementers who were not certified general or special education teachers as this study focused on three paraprofessional implementers who received coaching across two inclusive general education classrooms and one special education classroom. Four articles (33.3%; e.g., Weiser et al., 2019) exclusively included implementers with expertise in special education while two articles (16.7%; e.g., Kennedy et al., 2017) included implementers with general education expertise, two articles (16.7%; e.g., Pearl et al., 2012) included implementers with both general and special education expertise, and four articles (33.3%; e.g., Grossen, 2002) did not include this information. Seven articles (58.3%; e.g., Lorenzo, 2014) provided information on the average number of years of experience across implementers and the mean across included studies was 6.6 years with a range of 1 to 19 years. Information on implementers' gender was provided in five articles (41.7%; e.g., Courtade et al., 2017) and female implementers ($n = 58$, 93.5%) vastly outnumbered male implementers ($n = 4$, 6.5%). Four articles (33.3%; e.g., Duchaine et al., 2011) provided information on implementers race/ethnicity and the largest race/ethnicity group was White/European American ($n = 32$, 60.4%) followed by African American/Black ($n = 15$, 28.3%) and Hispanic/Latinx ($n = 6$,

11.3%). There was a broad range in class subjects taught by implementers, including mathematics (e.g., Gersten & Kelly, 1992), science (e.g., Kennedy et al., 2017), health and physical education (Tekin-Iftar et al., 2017), and art (Walker & Snell, 2016).

Coach Participants

Six of the included articles (50%; e.g., Courtade et al., 2017) reported information on the coaches. The average number of coaches in each study was 3.3 and the range was 1 to 13 coaches. None of the studies included information on the ages or race/ethnicities of coaches and only one article (Walker & Snell, 2016) included information on the gender of the single coach in the study who was female. The majority of included articles ($n = 8$, 66.7%; e.g., Gersten & Kelly, 1992) provided information on the role of the coach within the intervention context, and the majority of coaches that provided support to implementers were identified as being a part of the research team in some capacity. For example, Walker and Snell (2016) included a single coach who was a doctoral student in special education at the time of the study. Weiser et al. (2019) included three certified reading coaches who were trained by the research team to support implementation of a specific reading intervention; however, it is unclear if the certified reading coaches were also concurrently school or district employees. Although ongoing skill development for coaches that provided support to implementers was referenced (e.g., collecting survey data annually from coaches to guide future training activities; Courtade et al., 2017), only one article (8.3%; Weiser et al., 2019) provided information on the initial training and an assessment of coaching skills assessed prior to the intervention. Specifically, reading coaches from Weiser et al. (2019) were required to have a minimum of five years teaching experience, a minimum of three years coaching experience, and have scored at or above 93% on a coaching assessment created by the research team.

Rigor of Included Research Articles

Table 2 provides details on the number and associated percentage of studies that met none, more than one, and all elements within each QI category. The number of criteria assessed per article varied based on research design (i.e., 10 QIs for single-case and 24 QIs for group design research). Across included articles, the QI category with the highest adherence was the context and setting category (91.7%), indicating the majority of articles described the critical features of the context or setting (e.g., type of program or classroom). The QI category related to the description of the participants, including sufficient information on participant demographics (e.g., gender, age/grade, disability category), was another area of relative strength across articles as seven studies (58.3%) met both QI criteria.

The QI categories with the lowest adherence were implementation fidelity (0.0%) and outcomes measures and dependent variables (0.0%). The implementation fidelity QI category examines the degree to which fidelity of implementation was measured, including fidelity in delivery of the coaching intervention. The outcome measures and dependent variables category included indicators related to the appropriateness of the measures and the degree to which effect sizes were reported. Another area of low adherence to QIs across studies was the description of the practice (25.0%) as many of the included articles omitted information on the key features of the coaching intervention (e.g., coaching session dosage, coaching materials that supported conversations with implementers) that would allow for replication. Overall, when evaluating the 12 studies based on the criteria for methodological soundness (i.e., meeting 80% of QI criteria; Lane et al., 2009), only two studies (16.7%; Tekin-Iftar et al., 2017; Walker & Snell, 2016) demonstrated methodological soundness.

Outcomes

Across included articles, three studies (25.0%; e.g., Grossen, 2002) exclusively reported on student outcomes while two studies (16.7%; e.g., Lorenzo, 2014) only reported on implementer outcomes. The remaining seven studies (58.3%; e.g., Weiser et al., 2019) reported on both student and implementer outcomes.

Student Outcomes

When studies assessed student outcomes, dependent measures included assessments of student academic performance or specific behavior skills. For example, Weiser et al. (2019) utilized a battery of norm-referenced assessments of student literacy skills (e.g., phonemic awareness, fluency). They found consistent growth in student literacy skills when teachers received different formats of coaching targeting reading instructional strategies (i.e., regularly-delivered coaching, on-demand coaching, or technology-based coaching); however, coaching via technology produced larger statistically significant effects sizes than the other two forms of coaching across all student literacy skills. Instead of using validated assessments of academic performance like Weiser et al. (2019), Tekin-Iftar et al. (2017) evaluated students' acquisition of academic content aligned with a Health Education class. Specifically, researchers and teachers collaborated before implementation to identify specific target skills (e.g., defining first aid) and found that the simultaneous prompting procedure that teachers were coached to provide enabled students to acquire, maintain, and generalize their individualized target skills. As opposed to reporting on student academic performance, two studies (16.7%) focused on behavioral skills. Walker and Snell (2016) conducted direct observations of student participation (engaging in behaviors that corresponded to the intended activity) and use of replacement behaviors (communicating need for a break or attention either verbally or with a visual support) in the classroom, and found that all three students' behavior improved as a result of the coaching

intervention delivered to paraprofessionals. Similarly, Gersten and Kelly (1992) reported slight increases in student engagement when teachers received coaching on how to implement a video-based mathematics curriculum; however, it is important to note that the operational definition of student engagement in this study was unclear.

Implementer Outcomes

Studies that reported implementer outcomes tended to focus on implementer fidelity in utilizing EBPs and/or targeted instructional strategies for which coaching was provided. For example, Courtade et al. (2017) reported that teachers achieved higher levels of fidelity of implementation across selected academic curricula as a function of instructional coaching. Similarly, Kennedy et al. (2017) identified enhancements in general education Science teachers' use of EBPs to explicitly teach science vocabulary as well as the amount of time they spent on vocabulary instruction as a result of the coaching intervention. Gersten and Kelly (1992) reported that participating teachers enhanced their use of specific strategies (e.g., corrective feedback/probes, use of praise); however, it is important to note that, as reported by the authors, the small sample size of teachers precluded the use of inferential analysis to detect changes in teacher implementation as a result of the coaching intervention. With regard to maintaining implementation over time, Tekin-Iftar et al. (2017) reported that teachers not only used simultaneous prompting with 100% accuracy after receiving coaching, but they also maintained the acquired skill one, two, and four weeks following intervention and generalized the skill across other core content units.

Student and Implementer Outcomes

Across the seven studies (58.3%) that reported on both student and implementer outcomes, only three articles (42.9%) reported on the interaction between student and

implementer outcomes. Weiser et al. (2019) explored the degree to which teachers' engagement in technology-based coaching impacted students' literacy growth as measured by pre- and post-test data on reading, writing, and spelling standardized assessments. The authors utilized technology-based coaching variables (e.g., minutes using the online coaching platform) to investigate which explained the most variance in student academic outcomes, and identified that a number of teacher technology-based coaching variables (e.g., number of teacher logins on online coaching platform) had statistically significant effect on student gains in literacy. Duchaine et al. (2011) utilized a single-case design to examine the frequency of behavior-specific praise statements (BSPS) by teachers and the percentage of intervals of student on-task behavior. The authors presented the results on both dependent variables in the same multiple-baseline graph to allow for visual analysis of the interaction between student and teacher outcomes. They found that the increases in teacher-provided BSPS did not conclusively affect student on-task behavior. Walker and Snell (2016) also utilized a single-case design to examine changes in paraprofessional intervention implementation as a result of coaching and the impact on student behavior. Like Duchaine et al. (2011), Walker and Snell (2016) presented the results on the same graph to support visual analysis, and their findings indicated that while only two out of three participating paraprofessionals implemented the strategies as a result of coaching, all students engaged in higher levels of appropriate behavior during intervention as compared to baseline.

Discussion

The purpose of this study was to review existing research on coaching in inclusive, secondary classrooms. In this review, coaching was defined as an iterative support provided to implementers (e.g., general or special educators, paraprofessionals) to enhance their abilities to

translate evidence-based practices (EBPs) into the classroom (Joyce & Showers, 1981, 2002). Inclusive, secondary classrooms are unique in that they necessitate implementers to differentiate instruction to teach students with a broad range of support needs and operate within specific contextual factors of secondary schools (e.g., complex school schedules, pressure to ensure credit accrual). However, research on inclusive education consistently demonstrates the benefits for all students (Kalambouka, 2007; Sailor et al. 2006), indicating the need to identify effective implementation supports (e.g., coaching) for school personnel to utilize EBPs across grade levels, including secondary classrooms. Overall, the results of this review demonstrate a critical need to expand the quality and quantity of existing intervention research on coaching supports provided in inclusive, secondary classrooms.

First, the small number of included studies, particularly in comparison to the body of research in early childhood and elementary education, demonstrate a need for more research examining the use of coaching supports in inclusive, secondary classrooms. However, the relatively high rate of included articles published in recent years (i.e., 2017-present; $n = 5$ articles, 41.7%) suggests that there may be an increased emphasis on coaching supports in inclusive, secondary school contexts. This finding might be impacted by enhanced attention on the need for whole-school reform that target all students (McLeskey et al., 2012; Booth & Ainscow, 2011; Sailor & Burrello, 2013). Moving toward inclusive, whole-school reform emphasizes the distribution of supports and services to students who need them to successfully engage learning from a position of equity-based education (Artiles & Kozleski, 2016). By focusing on the whole-school as the unit of analysis rather than the classroom (Sailor, 2017), implementation supports, such as coaching, can be identified and utilized to enable *all* implementers (e.g., general and special educators, paraprofessionals) to implement effective

practices that enable *all* students, inclusive of students with disabilities, to achieve and attain valued outcomes. Because coaching supports enable implementers to differentiate instruction, use data for decision-making, and engage in evidence-based instructional practices (NIRN, 2019), there is a need for further research on how they can be effectively delivered in secondary settings and factors that influence uptake by diverse implementers.

Second, the results from this review demonstrate a critical need for researchers to enhance the description of the intervention context when examining the impact of coaching in inclusive, secondary classrooms. These contextual descriptions should include detailed information about the characteristics of student participants (e.g., grade level, disability), implementers (e.g., years in the education field, previous coaching experience), and coaches who provide support to implementers (e.g., familiarity with coaching content, initial professional development in coaching practices). In particular, the lack of information on student participants (e.g., only 50.0% of included studies provided any demographic data on students), coaches (e.g., only one study [8.3%] provided information on the initial coach training provided or skills assessed prior to intervention), and the selected EBP (e.g., only 58.3% of included studies explicitly stated what EBP was used) restricted the inferences that could be made in this review to guide future implementation of coaching interventions in inclusive, secondary classrooms. Providing rich descriptions of these contextual variables would enable researchers and practitioners to assess the contextual fit between the EBPs selected, the coaching delivered, student and implementer outcomes (Horner et al., 2014), and the potential for generalization to other contexts. Research that targets the training of school-based coaches, not just members of research teams, is also needed both to establish how to implement such supports in schools as well as to promote sustainability and scaling-up, consistent with implementation science.

Additionally, there is a critical need to further evaluate the interaction between student and implementer outcomes as well as implementation fidelity when coaching is delivered. In this review, only three included studies (25%) examined the interaction between student and teacher outcomes; however, previous research suggests there exists an interactive relationship between teacher perceptions of their implementation and student outcomes, with students influencing teachers and teachers then influencing students during the school year (Shogren et al., 2019). Therefore, it is imperative that future research examines student outcomes, implementer outcomes, implementation fidelity, and their interaction to accurately assess the impact and sustainability of an adopted intervention on outcomes (Cook & Odom, 2013).

Third, a significant area of need is enhancements in the description of coaching intervention characteristics. Because replication research is essential to validating interventions as EBPs (Travers et al., 2016), fully and richly describing the coaching support characteristics (e.g., duration, frequency, format) is necessary to meaningfully contribute knowledge to the field and inform practice and scaling-up. Across included articles, it was unclear how coaches structured their sessions with implementers and what kinds of discussions coaches and implementers had during the coaching sessions. However, implementation experts at the National Implementation Research Network (NIRN) contend that a guide for coaching conversations is critical as it provides a way for “an effective coach [to provide] ‘craft’ information along with advice, encouragement, and opportunities to practice and use skills specific to the innovation (e.g. engagement, treatment, clinical judgment)” (NIRN, 2015, p. 12). Guides for coaching conversations have been developed for specific EBPs that include coaching supports for implementers. Hagiwara et al. (2020) provides an example Coaching Conversation Guide for the *Self-Determined Learning Model of Instruction* (SDLMI; Shogren et al., 2018), an

EBP designed to teach self-regulated goal-setting and problem-solving skills. In addition to describing the coaching intervention more thoroughly, another area of focus in future research should be the explication of the coaching framework utilized to design the coaching supports for use in inclusive, secondary classrooms. Only a few coaching frameworks were referenced across studies (e.g., PALS, student data-focused coaching process) and only one article (8.3%; Kennedy et al., 2017) explicitly described how the coaching supports used in the intervention aligned with the adopted coaching model.

Finally, the results from the QI analysis suggest the need for enhanced rigor in research design as only two studies (16.7%) achieved the weighted evaluation standard of meeting 80% of the QI criteria. It is important to note that the QI criteria (CEC, 2014) utilized in this review were established after most of the included articles were published ($n = 7$ articles, 58.3%); however, future research should target assessment of implementation fidelity of the coaching intervention and clearer reporting on outcomes/dependent variables. Because none of the included studies met all of the QI criteria across these two categories, a strong recommendation for future research is to incorporate tenets of implementation science during the design phase to plan how interventions that include coaching supports will be put into action and implementation fidelity assessed to document impacts on students and implementers (Fixsen et al., 2005). Information on fidelity of implementation of the coaching supports is critical to understand whether the coaching was implemented as intended and only with the evaluation of such data can it reliably be concluded that the intervention led to positive student and implementer outcomes. Further, because of the lack in reported effects of the intervention on all outcome measures (e.g., effect sizes), conducting a meta-analysis to assess aggregate outcomes of coaching supports utilized in inclusive, secondary classrooms was not possible. As the research base grows, further

analyses can and should be conducted to allow greater examination of the characteristics of effective coaching interventions that lead to enhanced student and implementer outcomes.

Limitations

With regard to the findings from this review, there are several limitations that must be considered when interpreting the results. First, as noted the relatively low number of included articles and the limited information provided on participation and intervention characteristics precluded the utilization of a meta-analytic approach to systematically evaluate the impact of coaching and specific aspects of coaching interventions on student and implementer outcomes in inclusive, secondary classrooms. Similarly, the lack of details about the coaching supports and overall frameworks used to design the interventions across included articles presented challenges in comparing the various approaches to coaching implemented in secondary, inclusive settings to provide guidance to the field. Third, the diversity in the student and implementer outcome target areas (e.g., academic or behavioral skills) and associated measures used across included studies restricted comparisons of the outcomes reported. Lastly, the absence of included research conducted outside of the United States prevented an understanding of how coaching supports have been used in international contexts.

Conclusion

Overall, this review of existing research demonstrates that ongoing work is critically needed examining the impact of coaching in inclusive, secondary classrooms. Several significant gaps in the knowledge base emerged. There is an ongoing need to attend to issues that impact the quality of research that examines coaching in inclusive, secondary settings, including methodological soundness and reporting as well as challenges associated with conducting research in complex, secondary school contexts. Future research must focus on

better describing and testing the features of effective coaching supports in inclusive, secondary classrooms to advance knowledge, skills, and implementation fidelity of EBPs and advance implementer and student outcomes.

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Table 1*Articles Examining the Use of Coaching in Inclusive, Secondary Classrooms*

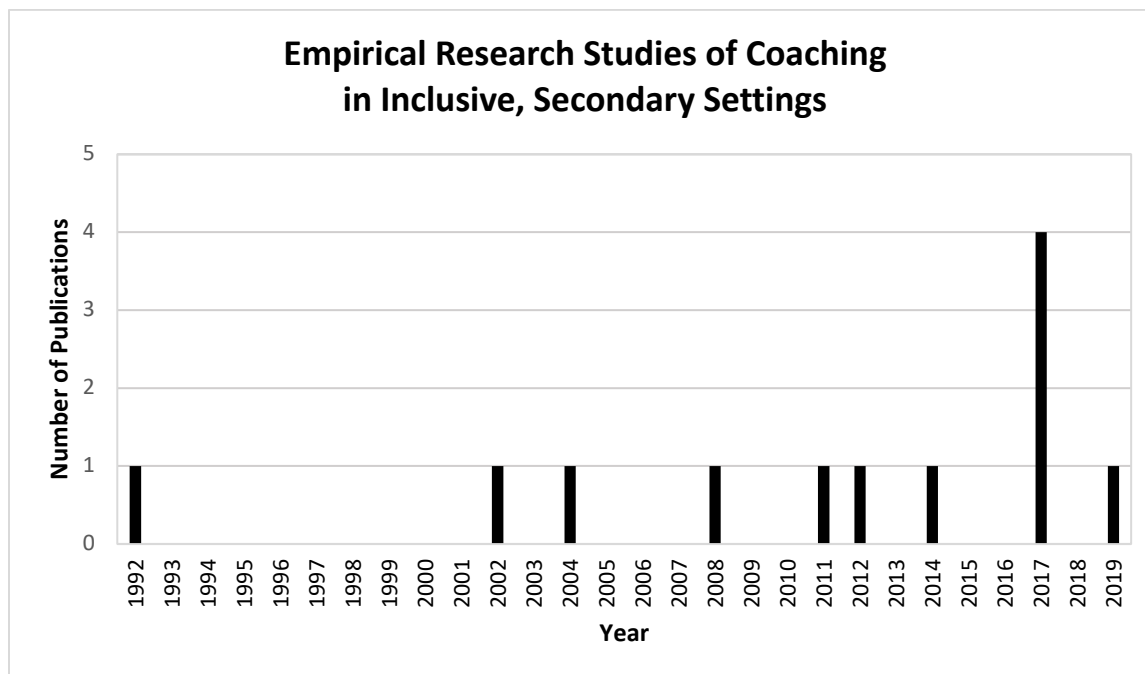
Reference	School Level	Implementer Role	Coach Role	Content/Skills Coached
Courtade et al. (2017)	Elementary, middle, and high school	Special education teachers	Research team members	English Language Arts, mathematics, and science instruction
Duchaine et al. (2011)	High school	General and special education teachers	Research team members	Behavior-specific praise statements
Gersten and Kelly (1992)	Middle and high school	Special education teachers	Research team members	Video-based mathematics curriculum
Grossen (2002)	Middle school	Not reported	Not reported	Not reported
Grossen (2004)	Middle school	Not reported	Not reported	Not reported
Kennedy et al. (2017)	Middle school	General education teachers	Research team members	Science vocabulary instruction
Lorenzo (2014)	Middle and high school	Not reported	Research team members	Skills related to diversity, equity, and inclusion in education
Lovett et al. (2008)	High school	Not reported	Not reported	Reading comprehension and decoding
Pearl et al. (2012)	Elementary, middle, and high school	General and special education teachers	Not reported	Inclusive service delivery for students with disabilities
Tekin-Iftar et al. (2017)	Middle school	General education teachers	Research team members	Health education
Walker and Snell (2016)	Elementary and middle school	Paraprofessionals	Research team members	Function-based interventions
Weiser et al. (2019)	Elementary and middle school	Special education teachers	Research team members (unclear if also school/district employees)	Reading, writing, and spelling

Table 2*Quality Indicators of Interventions Utilizing Coaching*

Quality Indicator (number of criteria)	None of the criteria met	At least one criteria met	All criteria met
Context and setting (1)	1 (8.3%)	---	11 (91.7%)
Participants (2)	4 (33.3%)	1 (8.3%)	7 (58.3%)
Intervention agent (2)	7 (58.3%)	0 (0.0%)	5 (41.7%)
Description of practice (2)	4 (33.3%)	5 (41.7%)	3 (25.0%)
Implementation fidelity (3)	9 (75.0%)	3 (25.0%)	0 (0.0%)
Internal validity (9)	4 (33.3%)	4 (33.3%)	4 (33.3%)
Outcome measures/dependent variables (6)	0 (100.0%)	12 (100.0%)	0 (0.0%)
Data analysis (3)	4 (33.3%)	2 (16.7%)	5 (41.7%)

Figure 1

Empirical Research Studies of Coaching in Inclusive, Secondary Settings



Chapter 3: Examining Goals Set by Students With and Without Disabilities Engaging in the Self-Determined Learning Model of Instruction in Inclusive, Secondary Classes

There is consensus in emerging college and career readiness frameworks that opportunities and experiences for students with and without disabilities to build self-determination, or the abilities that enable them to act or cause things to happen as they set and works toward goals, is a key component of student success after exiting high school (Conley, 2012; Morningstar et al., 2017). Further, the critical importance of abilities associated with self-determination, including goal setting and attainment (Shogren et al., 2015), has been increasingly emphasized in secondary education research and instructional standards that all students are expected to achieve (National Research Council, 2012; Next Generation Science Standards Lead States, 2013).

Goal setting is the process through which a person creates a target or plan for something they want to accomplish or achieve (Sands & Doll, 2000), and the process of goal setting and attainment involves: (a) developing a concrete goal, (b) identifying pathways to achieve that goal, and (c) selecting and undertaking the pathways that are most likely to result in the desired outcome (Shogren et al., 2017). Goal setting and attainment are frequently components of interventions in the special education field; however, leaders in self-determination and multi-tiered systems of support (MTSS) have identified a need for research focused on delivering instruction to promote skills associated with self-determination, including goal setting and attainment, in inclusive, general education classrooms benefiting students with and without disabilities (Shogren et al., 2016). MTSS frameworks are often organized as a three-tier model in which *all* students receive high-quality universal supports (i.e., Tier 1) that proactively promote positive student outcomes with increasingly specialized supports (i.e., Tiers 2 and 3) for

students who need diverse supports in addition to high-quality universal supports to attain academic, social, and/or behavioral outcomes (Lane et al., 2012). Self-determination intervention research, however, has tended to focus on Tier 2 and Tier 3 supports (Shogren et al. (2016), and there is a need for research and practice examining how to promote skills and abilities associated with self-determination as a Tier 1 support as this instruction is critical for all students to achieve positive in- and post-school outcomes (e.g., academic achievement, competitive employment).

The *Self-Determined Learning Model of Instruction* (SDLMI; Shogren et al., 2018; Wehmeyer et al., 2000) is a model of instruction designed to enable trained facilitators (e.g., general or special educators, related service providers) to teach students self-regulated problem-solving skills, including goal setting and attainment skills, that can be utilized across contexts (e.g., academic instruction, transition planning, community settings). The goal of using the SDLMI is to engage students in directing their goal setting and attainment by learning the steps necessary to identify goals, develop action plans, and evaluate attainment, solving problems encountered along the way. The SDLMI was designed to be a flexible intervention that trained facilitators with a variety of expertise can utilize to enhance student self-determination across educational settings (e.g., core content classes, transition planning). There are three distinct phases of the SDLMI (see Figure 2): Set a Goal (Phase 1), Take Action (Phase 2), and Adjust Goal or Plan (Phase 3). In each SDLMI phase, students are supported to solve an overall problem by answering a series of four *Student Questions* (for a total of 12 Student Questions across the three phases) that support them in moving from where they are (i.e., not having their goal related needs and interests satisfied) to where they want to be (i.e., the goal state of having their needs and interests satisfied). Each Student Question is associated with *Teacher Objectives*

that provide SDLMI facilitators with a road map of what they must do to support students in answering the targeted Student Question. To meet Teacher Objectives, SDLMI facilitators utilize *Educational Supports* (e.g., goal-setting instruction) to enable students to learn the skills needed to answer the Student Questions and self-direct learning. For example, when implemented in inclusive, general education settings, in Phase 2 (Take Action), facilitators can use the Educational Support of goal-setting instruction to meet the Teacher Objective of enabling students to state a goal and identify criteria for achieving the goal (associated with Student Question 4: What can I do to make this happen?). To provide this goal-setting instruction, teachers identify a brief period of instructional time in which they explicitly teach students how to set a goal that is relevant to the areas students identify would promote their academic success. Students typically work through the 12 SDLMI Student Questions one to two times over the course of an academic semester, and they can set and work to attain multiple goals (typically between two and four goals) over the course of a school year, creating multiple opportunities to learn and develop abilities associated with self-determination. Shogren et al. (2018) provides additional information on SDLMI implementation.

Since its initial introduction to the field (Wehmeyer et al., 2000), extensive research has demonstrated the efficacy of the SDLMI for enabling secondary students with disabilities to (a) set educationally relevant goals; (b) create an action plan to achieve those goals; and (c) evaluate their progress, revising their goal or action plan as needed (Hagiwara et al., 2017). With a specific focus on secondary students with disabilities who are engaging in transition planning, the SDLMI has been established as an evidence-based practice for enhancing self-determination and postschool outcomes (e.g., competitive employment, community participation; National Technical Assistance Center on Transition, 2017). Additionally, the SDLMI has been

increasingly implemented in inclusive, general education classrooms to build self-determination and academic abilities in all students, consistent with the MTSS framework described previously. Pilot studies have demonstrated the benefits of the SDLMI for students with and without disabilities learning in inclusive, general education mathematics classes (Raley et al., 2018; Raley et al., 2020). For example, Raley et al. (2018) explored the impact of implementing the SDLMI in two high school Algebra I classes and found that after one semester of SDLMI implementation in both classes, over 90% of students with and without disabilities achieved expected or greater than expected levels of goal attainment on self-selected goals that would facilitate mathematics learning.

While pilot evidence is promising, there are key areas for future research related to the implementation of the SDLMI in inclusive contexts as a Tier 1 support. First, pilot work has been restricted given small sample sizes and there is a need for large-scale research investigating the impact of the SDLMI on outcomes of students with and without disabilities when used in inclusive settings. Second, while previous research has demonstrated positive impacts of the SDLMI on goal attainment (Shogren et al., 2012), limited research has examined the content of the goals that students with and without disabilities set as they engage in the SDLMI in core content classes. Recently, Burke et al. (2020) analyzed 1,546 goals set by students with intellectual disability (ID) using the SDLMI in a statewide effort to enhance the transition from school to competitive, integrated employment. They found that students' set goals across broad goal areas (e.g., leisure and recreation, relationships, employment) related not only to employment but also other life domains. Burke et al. (2020) theorized that the broad range of goal areas likely reflected the diversity of interests of secondary students and perhaps how their teachers may have shaped instruction to align with students' interests and future plans related to

employment and other life domains after they exited high school. Although Burke et al. (2020) contributed to the literature base by analyzing the content of the goals that students with ID set using the SDLMI in context of transition planning, there is an ongoing need to analyze the goals that students with and without disabilities set using the SDLMI in inclusive educational contexts, such as core content, general education classrooms.

A better understanding of the content of the goals set by students with and without disabilities engaging in the SDLMI inclusive, general education classes has the potential to inform professional development training and implementation supports (e.g., coaching) for SDLMI facilitators. Although developers of the SDLMI have developed implementation materials to support facilitators in using the SDLMI across a variety of educational contexts (e.g., inclusive classes [Shogren et al., 2019], with students with complex communication needs [Shogren, Burke, & Raley, 2019b], transition planning [Shogren, Burke, & Raley, 2019a]), these implementation materials could be enhanced with knowledge of the goals set by students with and without disabilities using the SDLMI and how they relate to academic learning. Further, trained SDLMI coaches, using the SDLMI Coaching Model (Hagiwara et al., 2020), could integrate this information as they support general and special education teachers in identifying academic learning goal areas that may be overemphasized or underemphasized as students with and without disabilities engage in the goal-setting process of the SDLMI.

Purpose

The purpose of this study was to analyze the types of goals students set when using the SDLMI in inclusive, core content classes and explore the degree to which the goals students choose relate to academic learning as compared to other domains (e.g., leisure and recreation, relationships). Specifically, student goals were assessed based on their relevance to (a) the class

content of the inclusive, general education class in which the SDLMI was implemented (e.g., create specific study guides for English Language Arts exams), (b) general academic skills that would support student achievement across multiple classes (e.g., use guided notes across classes), and (c) general skills that would prepare students to engage in learning (e.g., go to sleep at a certain time to attend the first class on time). Additionally, differences in selected goal areas based on student disability status as well as whether SDLMI facilitators received coaching supports were explored. The following overall research question and sub-questions guided this analysis:

1. What academic skills were targeted across goals set by students who were receiving SDLMI instruction in inclusive, secondary classrooms?
 - a. To what degree were goals set by students receiving SDLMI instruction in inclusive, secondary classrooms related to the content area of the class and/or general academic skills?
 - b. What was the impact of disability status, as indicated by having an Individualized Education Program (IEP), on goals set by students receiving SDLMI instruction in inclusive, secondary classrooms?
 - c. What was the impact of the level of support provided to teachers to implement the SDLMI (e.g., coaching versus no coaching) on the student-selected goal areas?

Method

Sample

This analysis includes 774 goals set by students enrolled in six high schools across two states in the Mid-Atlantic during the first semester (Fall 2018) of a large, three-year, randomized controlled trial (RCT) examining the impact of differing levels of implementation supports for

teachers implementing the SDLMI (online versus online + coaching) on student (e.g., self-determination, goal attainment, academic achievement) and teacher (e.g., knowledge, skills, and usefulness of self-determination) outcomes when implemented in inclusive, general education classes. Previous analyses associated with this RCT have reported on the changes in teacher knowledge, skills, and usefulness of self-determination as a result of professional development training (Bojanek et al., 2020) as well as teacher implementation fidelity (Shogren et al., 2020), but this is the first analysis examining the content of the goals students with and without disabilities set when engaging in SDLMI instruction in inclusive, general education classes. The goals included in this analysis were set by students after completing Phase 1 of the SDLMI during their first semester of the three-year RCT. After answering the four Student Questions associated with Phase 1, students recorded their goals in a customized online platform and they logged back into the platform after they completed Phase 3 to rate their goal attainment via Goal Attainment Scaling (GAS; Kiresuk et al., 1994). The focus of the present analysis was the content of the goals set by students at the end of Phase 1 of the SDLMI and entered into the online platform, not goal attainment outcomes. Research is ongoing to explore student goal attainment as a function of SDLMI intervention and goal content in inclusive, general education classes.

Table 3 provides complete student demographic information that was primarily obtained from district databases while a small amount of missing demographic data (1.7%) was backfilled from a student self-report demographic measure. The majority of students that set the goals analyzed in this study were enrolled in ninth grade ($n = 752, 97.2\%$) during the fall 2018 academic semester while small subset of students were enrolled in 10th ($n = 13, 1.7\%$) and 11th ($n = 2, 0.3\%$) grade. Within the sample, there were 399 (51.6%) males and 370 (47.8%) females.

The majority of participants identified as White/European American ($n = 365$, 47.2%) followed by African American/Black ($n = 279$, 36.0%), Hispanic/Latinx ($n = 68$, 8.9%), Asian American ($n = 25$, 3.2%), and two or more races ($n = 23$, 3.0%). A small subset of students in the sample were English language learners (ELL; $n = 23$, 3.0%) and almost half of the participating students received free or reduced price lunch (provided as a proxy of socioeconomic status [$n = 352$, 45.5%]). The majority of students in the inclusive, secondary classrooms did not have a disability ($n = 636$, 82.2%); however, among students with a reported disability, the largest disability category was learning disabilities ($n = 82$, 10.6%) followed by other health impairment ($n = 26$, 3.4%) and autism spectrum disorder ($n = 10$, 1.3%).

Teacher implementers included trained general ($n = 12$) and special education teachers ($n = 5$) across English Language Arts (ELA; $n = 20$) or Science ($n = 16$) classes. The majority of teachers identified as female ($n = 15$, 88.2%; male: $n = 2$, 11.8%) and White/European American ($n = 15$, 88.2%; African American/Black: $n = 1$, 5.9%; Hispanic/Latinx: $n = 1$, 5.9%). All teachers were certified in the subject areas they taught and the degree to which teachers collaborated varied across schools. Specifically, two general education teachers (11.8%) indicated they did not collaborate at all with other teachers while the rest of the teacher sample partnered with other teachers to some extent by co-assessing student performance and progress ($n = 11$, 58.8%), co-planning lessons ($n = 9$, 52.9%), co-teaching some class sessions ($n = 9$, 52.9%), and co-teaching all classes ($n = 6$, 35.3%). Class sizes ranged from 13 to 29 students.

Procedures

Intervention

The SDLMI was implemented by 17 general ($n = 12$) and special education ($n = 5$) teachers in inclusive, general education classes targeting either ELA or Science core content. All

SDLMI implementers received a standardized, two-day SDLMI in-person training by self-determination experts in the summer prior to fall semester implementation. Teachers reported enhanced knowledge and skills related to promoting self-determination as a result of the training on standardized professional development training surveys administered before and after the two-day training, and consistently high perceptions of the usefulness of enhancing self-determination for all students (Bojanek et al., 2020). As described subsequently, following the in-person training, participating teachers received ongoing implementation supports (i.e., coaching and/or online supports) throughout the academic year.

Consistent with SDLMI implementation protocols (Shogren et al., 2019), teachers were trained to provide two SDLMI, whole-class mini-lessons (e.g., approximately 15-minute instructional periods) each week to explicitly teach students to use and apply the Student Questions to their goal setting and attainment. Teachers supported students with and without disabilities to set one individualized goal related to academic learning each semester (goals from the first semester were the focus of the present analysis). Teachers were also trained to provide opportunities for students to reflect and use the self-determination abilities (e.g., problem solving, self-regulation, planning; Shogren et al., 2015) they developed during instruction throughout their core content instruction. For example, while supporting students to answer the Student Questions during the Phase 1 mini-lessons, general and special educators explicitly taught students to weigh the benefits of working on goals in different areas (e.g., study skills, assignment completion) and then provided them opportunities and experiences to consider those options and engage in decision making during the core content instruction to select a priority goal area. Fidelity of implementation data was collected for both mini-lessons and core content instruction and suggested that teacher implementation fidelity was at expected levels across

targeted dimensions (i.e., adherence, quality of delivery, and participant responsiveness) and consistent across the three phases of the SDLMI (Shogren et al., 2020).

SDLMI implementation support groups

All teachers participated in the same training but were randomly assigned by high school campus to receive one of two types of implementation supports following the training. The two groups were: (a) online implementation modules disseminated every two weeks via email (online only) or (b) online implementation modules plus in-person, monthly coaching (online + coaching). After randomization during the first year, participating teachers ($n = 11$) at four high schools received online only supports while participating teachers ($n = 6$) at the other two high schools received online and coaching supports. The online implementation modules provided teachers with additional resources, video examples, and scenarios to supplement instruction across the three phases of the SDLMI. The sequence of the content aligned with the SDLMI schedule recommended for whole-class implementation (Shogren et al., 2019). The online implementation modules allowed teachers to communicate feedback on their implementation (e.g., share successes or challenges they experienced), but were not interactive (e.g., no feedback was provided or troubleshooting of challenges encountered). General and special education teachers assigned to the online plus coaching support group received the online modules as well as monthly, in-person coaching from coaches trained in the SDLMI coaching model (Hagiwara et al., 2020). The SDLMI coaching model is based on six coaching principles: (a) application, (b) empowerment, (c) equality, (d) reflective dialogue, (e) shared vision, and (f) trust. Further, the SDLMI Coaching Model defines four stages of the SDLMI coaching process (plan, observe, reflect, and share) to guide and operationalize specific tasks that coaches lead during interactions with facilitators and support them in setting goals for their implementation while also addressing

challenges they encounter using the SDLMI in their classrooms.

Goal Content Analysis

Goal Coding

To address the overall research question focused on types of goals set by students with and without disabilities receiving SDLMI instruction in inclusive, secondary classrooms, a directed approach to content analysis with deductive category development was utilized (Hsieh & Shannon, 2005). The first step in the data analysis process was to review the 774 goals and code them for whether they were related to academic learning (i.e., associated with general academic skills or a particular subject area) or another area (e.g., extracurricular activities, career interests). Then, each goal in the academic learning category was reviewed and coded for whether it was directly linked to the subject area (e.g., ELA, Science) where SDLMI instruction was delivered. The final step was deductive category development with categories emerging and being refined from ongoing review of the specific focus area of the goal (e.g., increasing grades, completing assignments regularly, being prepared at the start of class). Because many goals included multiple focus areas (e.g., “Do all of my homework and study at least 20 minutes a day.”), up to three focus areas could be coded for each goal. In the previous example, the goal would be coded as completing assignments and studying. The final codebook included 13 focus areas: (1) increasing grades or achieving passing grades, (2) completing assignments or turning them in regularly, (3) enhancing study skills, (4) participating in class (e.g., asking or answering questions by the teacher), (5) improving specific skills related to the subject area (e.g., “I will write 10 Spanish words every day.”), (6) engaging in note-taking skills, (7) enhancing test-taking skills, (8) learning time management skills, (9) improving interpersonal or intrapersonal skills while in class (e.g., asking for help from the teacher, keeping calm while learning in class), (10)

improving organization skills, (11) completing high school or pursuing postsecondary education, (12) attending class or school regularly, and (13) being prepared for class (e.g., ensuring necessary materials are accessible at the beginning of class).

After coding all goals to address the overall research question, further analyses were undertaken to address the research sub-questions. Specifically, the first author dichotomously coded ('0' for no, '1' for yes) each goal across three categories related to whether the goal targeted (a) the class content in which the SDLMI was implemented (e.g., read one chapter ahead of the assigned ELA text), (b) general academic skills that would support student achievement across multiple classes (e.g., study notes from each class for five minutes every night), and (c) general areas that would prepare students to engage in learning (e.g., arrive to school on time). In order to examine the degree to which a goal related to multiple areas of academic learning, more than one of these categories was coded as '1' if the goal targeted several areas (e.g., targeted SDLMI class content and general academic skills). These codes were then aggregated by each category to assess the degree to which goals related to academic learning to ultimately guide future instructional planning. Each goal was also coded based on whether or not students had an IEP ('0' for no, '1' for yes) to examine differences in the above domains. Finally, each goal was coded based on the implementation support provided to the teacher (online or online + coaching supports) to compare goal characteristics based on the type of support the teacher received.

Inter-Rater Reliability

A project coordinator with expertise in special education was trained by the primary researcher on the codebook with an introduction to all codes and definitions with examples from goals in the sample not designated for inter-rater reliability (IRR). The project coordinator used

the codebook to practice coding goals not included in the IRR sample until $\geq 90\%$ agreement with the primary researcher was achieved. After reaching an acceptable level of agreement, the project coordinator coded 194 of the 774 goals (25%) across all dimensions, including coding for the targeted subject areas, up to three codes for goal focus areas, and three codes for the degree to which the goal related to academic learning. IRR was calculated based on the percentage of agreement across all codes by dividing the number of agreements by the sum of the total number of codes, then multiplying the number by 100. The overall agreement between the coding results from the primary researcher and project coordinator was 91.6% agreement and any coding disagreements were discussed to reach consensus before finalizing the dataset for analysis.

Results

The vast majority of goals set by students in inclusive, general education classes focused on academic learning ($n = 719, 92.9\%$), such as “Take neater notes so when I study I can read and study easily” and “My goal was to turn my homework on time and complete my homework.” The remaining goals ($n = 55, 7.1\%$) targeted other areas such as fitness (“Exercising everyday [*sic*] of the week for a [*sic*] hour or more”) or extracurricular activities (“Get better at football/sports”).

Connection of Student Goals to Academic Learning

Targeted Subject Areas

Although the SDLMI was utilized in ELA and Science classes, the focus of student goals targeting academic learning spanned a broad range of subject areas. In fact, the largest number of student goals set using the SDLMI ($n = 349, 45.1\%$) targeted more than one subject area (e.g., “To turn all of my work in for all classes”). Across students who set a goal concentrated on one subject, areas targeted in order of frequency were ELA ($n = 109, 14.1\%$), Mathematics ($n = 72,$

9.3%), Science ($n = 57$, 7.4%), Foreign Language ($n = 34$, 4.4%), History or Government ($n = 27$, 3.5%), Music ($n = 3$, 0.4%), Physical Education or Reserve Officer Training Corps ($n = 2$, 0.3%), and Business ($n = 1$, 0.1%). Additionally, 7.5% ($n = 58$) of goals targeted skills that would facilitate academic learning even though they were not specifically associated with a subject area (e.g., “Go to school everyday [*sic*]”). Table 4 provides frequencies of goals per subject area and associated examples of goals.

Goal Focus Areas

In addition to identifying the subject areas targeted across goals, deductive category development led to 13 specific focus areas across student goals, including increasing grades or achieving passing grades, improving specific skills related to the subject area, and enhancing study skills. To ensure the coding process accounted for multiple foci within a single goal, up to three goal focus areas could be identified per goal. Across the full sample of goals, 552 (88.6%) had a single goal focus area while 115 (14.9%) had two foci and 15 (1.9%) had three foci. Table 5 provides information on the number of goals per goal focus area and examples of goals across focus areas. Additionally, Figure 3 provides a visual representation of the keywords across student goals in the form of a word cloud in which keywords in larger text indicate the words students more frequently referenced in the goal descriptions.

Overall, there were 254 goals that included a focus area of increasing grades or achieving passing grades, comprising 32.8% of all goals in the sample. This focus area was the most frequently represented across student goals as shown by the keyword “grades” being the largest text in Figure 3. Students often set a specific grade point average (GPA) or grade benchmark that they aimed to achieve, such as “Stay organized [*sic*] and get above and 3.5 gpa” or “I want to get all my D’s to C’s before the quarter ends.” However, some students were less specific in the

GPA or letter grade criteria (e.g., “Get good grades.”) There were 157 (20.2%) goals that targeted completing assignments or turning them with regularity. Students often set a goal that targeted both completing their assigned tasks and submitting them on time (e.g., “I want to improve upon doing my homework more and turning it in on time”). A total of 134 (17.3%) goals focused on enhancing study skills, such as “My goal is to learn to study on my own and use my time wisely.” Participating in class focus area included 122 goals, representing 15.8% of goals in the sample. Participating in class goals often targeted engagement (e.g., “Being more engaged [*sic*] like asking and answering questions) or attending to instruction (e.g., “Paying more closely attention and taking more notes.”) Ninety-three goals (12.0%) targeted specific skills related to a subject area, including “I want to get better at understanding formulas in math” and “My goal is to be able to become better at remembering vocabulary words and their definitions in English.” Remaining focus areas were note-taking skills ($n = 65$ goals, 8.4%), enhancing test-taking skills ($n = 21$ goals, 2.7%), learning time management skills ($n = 18$ goals, 2.3%), improving interpersonal or intrapersonal skills while in class ($n = 15$ goals, 1.9%), improving organization skills ($n = 11$ goals, 1.4%), completing high school or pursuing postsecondary education ($n = 9$ goals, 1.1%), attending class or school regularly ($n = 7$ goals, 0.9%), and being prepared for class ($n = 2$ goals, 0.3%).

Connection of Student Goals to Content Area

To assess the degree to which goals related to the content area of the class where SDLMI instruction occurred and/or another content area, goals were dichotomously (‘0’ for no, ‘1’ for yes) categorized in one or more groups based on whether the goal targeted: (a) class content in which the SDLMI was implemented, (b) general academic skills that would support student achievement across one or more other classes, and (c) general areas that would prepare students

to engage in learning. There were 505 goals (65.3%) that directly targeted academic learning in the class in which the SDLMI was implemented (either ELA or Science). A total of 563 (72.7%) goals targeted general academic skills that would support student achievement across one or more other classes, and 46 (5.6%) of goals targeted general areas that are prerequisite skills to academic learning (e.g., staying awake in class).

Differences Based on Student Disability Status

The impact of student disability status (as indicated by having an IEP) on targeted subject areas and goal focus areas was also explored. Across 120 goals set by students with an IEP, the majority of goals ($n = 110$, 91.7%) focused on academic learning, while the remaining goals ($n = 10$, 8.3%) targeted other areas (e.g., extracurricular activities). As observed in the full sample of goals, the largest number of goals set by students with IEPs set goals targeted more than one subject ($n = 47$, 39.2%). Subject areas targeted in order of frequency were ELA ($n = 32$, 26.7%), Mathematics ($n = 8$, 6.7%), Science ($n = 4$, 3.3%), History or Government ($n = 2$, 1.7%), and Foreign Language ($n = 1$, 0.8%). Additionally, 13.3% ($n = 16$) of goals targeted academic facilitator skills and were not specifically associated with a subject area. Compared to the overall sample of subject areas targeted across all student-selected goals, ELA was emphasized more across goals set by students with IEPs (26.7% across goals set by students with IEPs versus 14.1% across all goals). Further, students with IEPs targeted academic facilitator skills at a higher rate than their peers without disabilities (13.3% versus 7.5%). Subject areas of Music, Business, and Physical Education or ROTC were not targeted by students with IEPs.

Across goals set by students with IEPs, there were 31 (25.8%) goals that focused on increasing grades or achieving passing grades, consistent with the full sample. When compared to the full sample, a slightly higher percent of goals ($n = 23$, 19.2%) targeted by students with

IEPs focused on specific skills related to a subject area while completing assignments or turning them with regularity included 22 (18.3%) goals. The participating in class focus area included 17 goals, representing 14.2% of goals in this sub-sample. Remaining focus areas with more than one goal were enhancing study skills ($n = 5$ goals, 4.2%), improving interpersonal or intrapersonal skills while in class ($n = 4$ goals, 3.3%), and enhancing test-taking skills ($n = 3$ goals, 2.5%). Improving note-taking skills, learning time management skills, improving organization skills, and attending class or school regularly each included one goal (0.8%). None of the goals in this sub-sample targeted completing high school or pursuing postsecondary education and being prepared for class.

Compared to the full sample of goal focus areas, the areas targeted across students with IEPs demonstrated a similar pattern. Specifically, most of the goals across both samples (i.e., the full sample of goals and those set by students with IEPs) targeted increasing grades or achieving passing grades (32.8% across all versus 25.8% of goal set by students with IEPs). However, a higher rate of goals set by students with IEPs targeted improving specific skills related to the content area compared to the full sample of goals (19.2% versus 12.0%). The rate of goals that targeted study skills within the subset of goals set by students with IEPs was much lower than the rate observed across the full sample (4.2% versus 17.3%). Enhancing note-taking skills was a greater area of focus within the overall sample of goals compared to the sub-sample of goals set by students with IEPs (8.4% versus 0.8%).

Differences Based on Teacher Implementation Support

Because teachers in the large RCT received one of two levels of supports (i.e., online only or online + coaching), the impact of the level of support provided to teachers on the student-selected goal areas was explored. Across the 629 goals (81.3%) set by students whose teachers

received only the online modules, 583 goals (92.7%) focused on academic learning. There were 145 goals (18.7%) that were set by students who engaged in the SDLMI with teachers that received both online module and coaching supports, and 136 goals (93.8%) focused on academic learning. The subject area targeted most frequently in the online module only group was ELA ($n = 40$ goals, 27.6%) while only 69 goals (11.0%) focused on that subject area in the online and coaching group. Interestingly, the largest percent of goals in the online and coaching group targeted academic facilitator skills ($n = 310$ goals, 49.3%), which was a higher frequency than the online group ($n = 39$ goals, 26.9%). The largest focus area across both implementation support groups was increasing grades or achieving passing grades (online + coaching: 182 goals, 28.9%; online: 42 goals, 28.9%). In the online group, the focus area of improving interpersonal or intrapersonal skills while in class was well-represented across goals ($n = 23$, 15.9%) while the second largest focus area in the online and coaching group was completing assignments or turning them with regularity ($n = 102$ goals, 16.2%). Additionally, the focus area group associated with improving note-taking skills was notably larger in the online group ($n = 16$ goals, 11.0%) compared to the online and coaching group ($n = 30$ goals, 4.8%).

Discussion

The overall purpose of this study was to examine the goals students with and without disabilities set when using the *Self-Determined Learning Model of Instruction* (SDLMI; Shogren, et al., 2018; Wehmeyer et al., 2000) in inclusive, core content classes. Previous pilot research has demonstrated the positive impact of the SDLMI on student self-determination and goal attainment in inclusive contexts (Raley et al., 2018; Raley et al., in press); however, researchers have never explored the focus of the goals selected by students using the SDLMI in core content classes. Such work will inform ongoing research and practice related to instructional planning

and implementation supports for teachers using the SDLMI, identifying additional needs for professional development training and other supports (e.g., coaching) in enabling all students to identify academic learning goal areas that are either directly associated with the academic content or supportive of general skills that would facilitate learning (e.g., self-regulatory processes) across curriculum content areas.

As previously described, the SDLMI is a model of instruction designed to enable teachers to overlay instruction in skills and abilities associated with self-determination (e.g., goal setting and attainment) on core content curricula to teach students critical self-regulated problem-solving strategies to achieve self-selected goals (Shogren et al., 2018). Therefore, the ultimate goal of using the SDLMI in inclusive, core content classes is to equip teachers with a framework to provide their students with opportunities and experiences to (a) set goals related to academic learning, (b) solve problems encountered in the process of working toward self-selected goals, and (c) evaluate their progress toward goal achievement. Although student goals could be directly associated with specific curriculum, the greater purpose of utilizing the SDLMI is to create opportunities and experiences for students to set and work towards goals leading to generalization of those skills across multiple curriculum content areas (Shogren et al., 2016).

Several notable trends emerged from examining the types of goals students with and without disabilities set during their first semester of engaging in the SDLMI. First, across the full sample of goals, the vast majority of goals focused on academic learning (92.9%) as opposed to other areas (e.g., extracurricular activities; 7.1%). This suggests that general and special education teachers using the SDLMI (after receiving professional development training and implementation supports) were successful in supporting their students to set goals that would enhance their students' academic learning in inclusive core content classes, supporting the

potential of using the SDLMI to enhance academic learning and achievement. The focus on academic learning found in this analysis aligns with a previous content analysis of 332 goals set by students with disabilities in middle and high school (Williams-Diehm et al., 2010), and although the focus of Williams-Diehm et al. (2010) was not on academic learning, the most common goal type was academic-focused. The authors posited that the high frequency of academic goals suggested that school was a key component of adolescents' lives and future success, and further supports the importance of promoting abilities and skills associated with self-determination in inclusive classes, as a Tier 1 support. The findings of this study, further support this assertion, and suggest that the SDLMI can be used to promote academic-related goal setting, particularly when delivered in inclusive, general education classes.

Second, the broad range of subject areas represented across student-selected goals was an interesting finding as all students engaged in the SDLMI in either ELA or Science classes, suggesting that while the SDLMI supported students in setting academic-focused goals, these goals were not always targeted to the specific class in which instruction was delivered. Because the overall goal of the SDLMI is to build self-regulated problem-solving strategies that students can generalize across multiple curriculum content areas, this finding could suggest that teachers successfully enabled students to direct the goal-setting process and select the subject area(s) that they identified as a priority for improvement or growth. Relatedly, the inclusion of goals focused on skills that would facilitate academic learning that were not specifically associated with a subject area suggested that some students identified a need to improve on prerequisite skills that would enable them to more fully engage in academic learning, across classes. This finding was further illustrated within the sub-sample of students with IEPs as academic facilitator skills were targeted at a higher rate than within the full sample, suggesting that

students with IEPs identified prerequisite skills as an area for growth. Future research and practice should explore how special education supports and services can be leveraged to support students with IEPs in setting and working toward goals that target academic facilitator skills in inclusive classes. Further, research is needed that examines how general and special education teachers enable students to select subject areas or skills associated with academic learning that aligned with their areas of needed improvement to guide professional development training and implementation supports and perhaps to communicate and engage other teachers in understanding the goals that students are setting in other classes. Exploring how general and special education teachers collaborate with students to set goals would provide an opportunity to determine the need for intensity of additive supports (e.g., Tier 2 or 3) on top of Tier 1 instruction for students with and without disabilities who would benefit from additional supports for learning and participation related to goal-setting.

Third, the largest focus area across goals in the full sample and sub-sample of students with IEPs was increasing grades or achieving passing grades, indicating that academic achievement and performance were a priority for the majority group of students who were in their first semester of high school. Although enhancing or attaining a specific grade was emphasized in this analysis, future research should examine if the focus on grades maintains across semesters as students engage in the SDLMI and their teachers develop fluency in using the model of instruction. Specifically, because the overall goal of the SDLMI is to build self-regulated problem-solving strategies that students can generalize across multiple curriculum content areas, it would be expected that teachers adjust their instruction and students shift in their focus areas to target broader skills that would support academic learning over time. Additionally, as students approach graduation and are faced with decisions regarding postschool

endeavors (e.g., postsecondary education, employment), the focus of their self-selected goals might shift to transition-related areas. Overall, the changes that are observed over time have the potential to guide supports and expectations across tiers of support.

Fourth, minimal differences across goals set by students with and without IEPs and across teacher implementation support groups were observed in this analysis. Specifically, goals set by students with IEPs followed the same general subject area (i.e., multiple subject areas) and focus area (i.e., increasing or achieving passing grades) priorities. This finding is particularly important as it suggests that students with and without IEPs learning in inclusive, general education classrooms identify similar areas of needed improvement and the potential benefit from engaging in the goal-setting process for all students in inclusive contexts. Across both teacher implementation support groups, the vast majority of goals focused on academic learning; however, the online and coaching group included a lower frequency of goals targeting ELA. This was an unexpected findings as the two high schools randomly assigned to the online and coaching group implemented the SDLMI in ELA classes. Further, the online and coaching group included almost double the representation of goals targeting academic facilitator skills, which could potentially be attributed to the in-person coaching the general and special educators received as it might have shaped their instruction, particularly given that most students were in ninth grade and academic facilitator skills might be critical to build during the early years of high school. The emphasis on academic facilitator skills in the online and coaching group identified in this study raises several questions that must be addressed. For example, what is the role in online supports in engaging teachers in providing goal-setting instruction? How do trained SDLMI coaches support teachers in collaborating with students to identify goal focus areas that

align with their needs? What training, mentoring, and support do coaches need as they engage teachers in enhancing their students' goal setting and attainment skills?

Limitations

Several limitations should be considered when interpreting the results of the present study. First, the data in this analysis were collected during a single semester that students engaged in the SDLMI, which limited the range of analyses that could be undertaken to examine the changes in goal focus areas over time. Relatedly, the sample of goals were collected during students' first semester engaging in the SDLMI and future research should examine changes in the connection of student goals to academic learning as they develop fluency in setting and achieving goals by iteratively engaging in the SDLMI process. Second, given the large sample, it was not feasible to collect concrete details on student support needs (e.g., level of support needed to engage in goal-setting process). Specific information about the instructional supports that teachers utilized to support students, particularly students who might have received more intensive supports, in selecting goals would have provided some insight into the common goal focus areas selected by students. Third, the present study focused on analyzing the content of the goals set by students with and without disabilities; therefore, integrating student outcome (e.g., goal attainment, self-determination, academic achievement) and other data (e.g., fidelity of implementation) was beyond the scope of this analysis. Ongoing research is needed that systematically examines information about goal content with outcome data, exploring potential relationships between goal content and attainment as well as growth in self-determination. Lastly, in some of the inclusive classes included in the large RCT, both general and special education teachers co-implemented the SDLMI while in other classes the general education teacher was the primary implementer. Ongoing research is needed on the impact of co-taught

self-determination instruction and the roles that general and special educators take in the process. For example, is it more effective for general educators to provide whole-class goal-setting instruction while the special educators collaborated with small groups of students who required more support in setting a goal? Future research should explore the role of educators with varying areas of expertise in supporting students with SDLMI goal selection when implemented in a tiered framework to better understand the instructional strategies that teachers utilize to engage students with a broad range of support needs.

Implications for Practice and Research

The results from the present study suggest numerous implications for practice and future research. First, in the large RCT through which the goal sample was collected, students were engaged in the SDLMI when it was implemented as a Tier 1 support and future applications should explore how Tier 2 and 3 supports could be provided to support students who require more intensive goal-setting instruction to fully engage with Tier 1 instruction. Second, future research should examine the most effective supports for teachers (e.g., professional development training, coaching) to enable students to self-direct the goal-setting process in inclusive classrooms that target core content. For example, how do teachers adjust their goal-setting instruction to provide students with opportunities and experiences to identify goal focus areas that best meet their learning needs? Should teachers always encourage students to select goals that target content learning or focus more on self-regulated problem-solving skills? Relatedly, because only slight differences were identified in this analysis across online only and online and coaching groups, examining key characteristics of effective SDLMI coaches (e.g., academic qualifications or experience, professional skills, basic social skills, good judgement, knowledge of the field, personal ethics, and willingness to learn; National Implementation Research

Network, 2015) will provide guidance on implementation supports teachers need to implement the SDLMI with fidelity. Lastly, research is needed to explore how student-selected goal focus areas while in high school impact the attainment of future goals. Because future goals are aims that people desire but have yet to achieve (Elliot & Murayama, 2008), exploring differences in the goals high school students set and their future goals (e.g., pursuing higher education, employment) could potentially provide guidance to the field on the relationship between setting goals while in high school and future goals as preliminary research has demonstrated that self-determination predicts the number of future goals people with ID set (Di Maggio et al., 2020).

Conclusion

The findings from this study provide guidance on the types of goals students set when using the SDLMI in inclusive, core content classes and explore how the goals students select relate to academic learning. The results provide further evidence of the utility of the SDLMI in inclusive contexts to support a broad range of academic goals set by students with and without disabilities. Student goals strongly demonstrated a focus on academic learning across goal focus areas, which could potentially impact students' academic motivation and achievement. As such, future research should explore how best to support general and special educators in enabling students with and without disabilities to set goals that promote learning, participation, and engagement in inclusive classes.

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Table 3*Sample Demographics*

Characteristic	N = 774	
	n	%
Grade		
9th	752	97.2
10th	13	1.7
11th	2	0.3
Missing	7	0.9
Gender		
Male	399	51.6
Female	370	47.8
Missing	5	0.6
Race/Ethnicity		
White/European American	365	47.2
African American/Black	279	36.0
Hispanic or Latinx	68	8.9
Asian American	25	3.2
Two or more races	23	3.0
American Indian/Alaska Native	4	0.5
Hawaiian Native or Pacific Islander	3	0.4
Missing	8	1.0
Disability		
No disability	636	82.2
Learning disabilities	82	10.6
Other health impairment	26	3.4
Autism spectrum disorder	10	1.3
Intellectual disability	5	0.6
Speech language impairment	4	0.5
Emotional or behavioral disorder	3	0.4
Physical disabilities	2	0.3
Traumatic brain injury	1	0.1
Missing	4	0.5
Individualized Education Program (IEP) status		
No	643	83.1
Yes	123	15.9
Missing	8	1.0
English language learner (ELL) status		
No	740	95.6
Yes	23	3.0
Missing	11	1.4
Free and reduced price lunch status		
No	393	50.8
Yes	352	45.5
Missing	29	3.7

Note. Total of percentages for each category may not be 100% due to rounding.

Table 4*Student Goals and Examples by Subject Area*

Subject area	<i>n</i>	%	Example goal descriptions
One or more subject areas	349	45.1	<p>“I want to get A’s and B’s in all classes by studying for test and quizzes until the end of the semester.”</p> <p>“My goal is to answer at least 2 questions in each class every week.”</p> <p>“I want to be able to understand my classes more than just taking notes. At end of every class I want to recite what I learned or what was taught by notes or asking a good question to the teacher.”</p> <p>“My goal is to get A [<i>sic</i>] in three classes for this semester.”</p> <p>“My goal is to really pay attention in 5 out of 7 of my classes for 4 weeks and not get distracted.”</p>
English Language Arts	109	14.1	<p>“I want increase my English grade to at least a 90%.”</p> <p>“I will improve in English class by studying and writing essay [<i>sic</i>].”</p> <p>“I want to be able to ask for help when I am stuck at least three times each English class.”</p> <p>“I will improve my English grade by reviewing my notes 3 times a week.”</p> <p>“I want to improve in English class by being more organized and checking my binder every night.”</p>
Mathematics	72	9.3	<p>“Correctly solve two word problems every school day until christmas [<i>sic</i>] break.”</p> <p>“Improve and practice linear equations and algebraic [<i>sic</i>] expressions.”</p> <p>“Stay on pace with the math assignments and check my progress every day.”</p> <p>“Study for math class at least 3 times per week.”</p> <p>“Get at least a B in Algebra I by quarter 2.”</p>
Academic facilitators	58	7.5	<p>“I want to stop sleeping in school.”</p> <p>“Manage my time better so that I am not staying up late to finish homework that is due the next day.”</p> <p>“I want to procrastinate less.”</p>

			<p>“Improve on coming to school everyday [<i>sic</i>], not missing important school days that affect my grades.”</p> <p>“To stay off my phone and focus on work.”</p>
Science	57	7.4	<p>“I wanna [<i>sic</i>] get higher than a C in QT 2 in earth science.”</p> <p>“To finish all labs the day they are due.”</p> <p>“I want to take better notes in science class.”</p> <p>“Get better at doing [<i>sic</i>] test and a [<i>sic</i>] least a 80 every time in psychical [<i>sic</i>] science.”</p> <p>“I want to be more organized in Biology class.”</p>
Foreign Language	34	4.4	<p>“Write out the sentence formats and practice writing a sentence in Spanish twice a week.”</p> <p>“I want to get better at taking notes in Spanish class so I can get good grades.”</p> <p>“Learn how to say the weather in Chinese.”</p> <p>“To articulate my french [<i>sic</i>] words in class.”</p> <p>“In Spanish I, I will rewrite my notes three times a week for twenty minutes each time.”</p>
History or Government	27	3.5	<p>“My goal is to improve my studdling [<i>sic</i>] effort in social studies.”</p> <p>“Study well for the test in government class, so that I can get a good grade on the test.”</p> <p>“I can study my government study sheets the week before a test.”</p> <p>“I want to improve my grade in Government and do better on my tests and quizzes so that [<i>sic</i>] can end up with 4.000 GPA.”</p> <p>“I will get an A in A.P. government for the 2nd quarter.”</p>
Music	3	0.4	<p>“I would like to practice my cello, specifically ‘Symphonie G Moll’ for at least 45 minutes every day, except for Wednesdays.”</p> <p>“I want to improve my guitar skills in Jazz Band.”</p> <p>“I want to get better at sight reading music.”</p>

Physical Education or ROTC	2	0.3	“I need to start participating in phys [<i>sic</i>] ed.” “Pass every AFJROTC rank test for the year and be a Technical Sergeant by the end of the year.”
Business	1	0.1	“I want to do better in JDG (business class). Right now I have 50% done. I would like to have 80%.”

Note. The total of percentage for subject areas may not be 100% due to rounding. A.P. = Advanced Placement; AFJROTC = Air Force Junior Reserve Officer Training Corps; GPA = grade point average; JDG = Jobs for Delaware Graduates; QT = quarter; ROTC = Reserve Officer Training Corps.

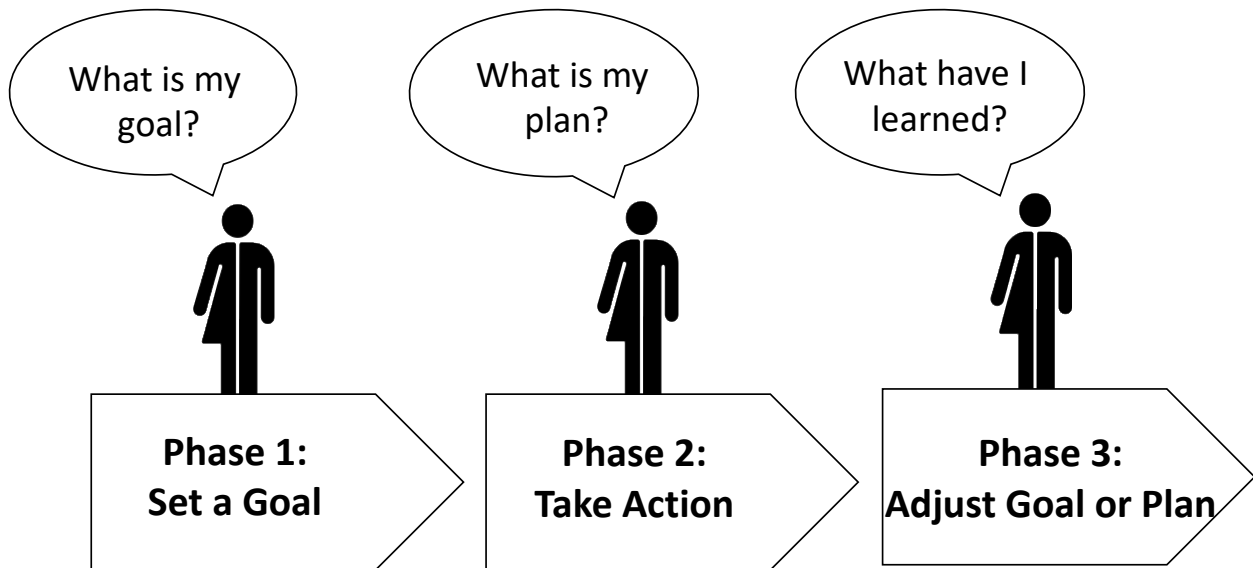
Table 5*Goal Focus Areas and Examples*

Focus Area	<i>n</i>	%	Example goal description
Increasing grades or achieving passing grades	254	32.8	“To make my grade go up in my ELA class.”
Completing assignments or turning them in regularly	157	20.2	“My goal is to focus more and complete my work.”
Enhancing study skills	134	17.3	“Learn to study the correct information and ask for help if I do not understand.
Participating in class	122	15.8	“I want to improve on asking more questions in class.”
Improving specific skills related to the subject area	93	12.0	“I need to learn almost every Supreme Court case.”
Engaging in note-taking skills	65	8.4	“Rewrite my notes for at least 20 minutes a night.”
Enhancing test-taking skills	21	2.7	“My goal is to get better at doing math tests on the computer.”
Learning time management skills	18	2.3	“Focus on balancing study skills and friends. Learn when to hangout and when to study.”
Improving interpersonal or intrapersonal skills while in class	15	1.9	“To maintain my behavior by keeping calm in class twice a week.”
Improving organization skills	11	1.4	“I want to be more organized in Biology class.”
Completing high school or pursuing postsecondary education	9	1.1	“Make it through high school.”
Attending class or school regularly	7	0.9	“My goal is to make it to class on time at least 3 times a week.”
Being prepared for class	2	0.3	“Bringing materials, be responsible, better grades in all my classes.”

Note. The total of percentage for subject areas may not be 100% due to rounding.

Figure 2

Three Phases of the Self-Determined Learning Model of Instruction (SDLMI)



Note. Reprinted with permission from Shogren et al. (2018).

Chapter 4: The Impact of the Self-Determined Learning Model of Instruction on Student Self-Determination in Inclusive, Secondary Classrooms

In the school context, enhancing self-determination, or the skills and abilities people need to act or cause things to happen in their lives as they set and works toward goals, is a key part of promoting meaningful outcomes for *all* students. Adolescents and young adults develop self-determination as they have repeated opportunities and experiences to develop and use skills and abilities associated with self-determination, including making decisions, expressing preferences, solving problems, setting and achieving goals, and acquiring self-awareness and self-knowledge. Across college and career readiness frameworks developed for all students, skills and abilities associated with self-determination have been identified as a critical predictor of a successful transition from high school to postsecondary education, employment, and community life (Conley, 2012; Shogren, Wehmeyer, Palmer, Rifenbark, et al., 2015; Test et al., 2009). Although enhancing self-determination is advocated for across the general and special education fields, the majority of comprehensive self-determination intervention research has targeted students with disabilities (Algozzine et al., 2001; Burke et al., 2018) as a means to improve disproportionately poor postschool outcomes (Newman et al., 2011; Nord et al., 2015).

Recently, leaders in the field of school reform have advocated for building *integrated systems of supports* within schools to address the complexities of implementing whole-school interventions with fidelity that support all students (Sailor, 2008-2009). This reframing of school structures shifts the focus toward equity-based education (Artiles & Kozleski, 2016), emphasizing the distribution of evidence-based supports and services on the basis of measured needs to successfully engage all students in the learning process (SWIFT Education Center, 2017). Integrated systems of supports are often designed around three tiered models that are

premised on providing high-quality, universal supports for all students (i.e., Tier 1 supports), with more intensive supports for students to learn and participate in the curriculum and address learning needs (i.e., Tiers 2 and 3 supports). It is important to note that within a tiered model of supports, the starting point for intervention supports is always Tier 1 with more intensive supports only provided after effective Tier 1 supports and instructional strategies are attempted with fidelity (Lane et al., 2007). Tier 1 supports are intentionally developed to be proactive, preventative, and designed to benefit all students, and Tier 2 and 3 supports are provided in addition to Tier 1 supports. Given the importance of self-determination for all students' postschool success, there is a critical need to examine the impact of interventions designed to promote self-determination for *all* students on student outcomes when they are provided as a universal, Tier 1 support in inclusive classrooms (Shogren et al., 2016).

Self-Determination

A recent theoretical reconceptualization of self-determination, Causal Agency Theory, defines self-determination as a

...dispositional characteristic manifested as acting as the causal agent in one's life. Self-determined people (i.e., causal agents) act in service to freely chosen goals. Self-determined actions function to enable a person to be the causal agent in his or her life.

(Shogren, Wehmeyer, Palmer, Forber-Pratt, et al., 2015, p. 258)

Causal Agency Theory specifies that there are three essential characteristics of self-determination: volitional action (selecting goals based on one's preferences and needs), agentic action (self-directing planning actions that support goal attainment), and action-control beliefs (believing in one's abilities to reach self-selected goals).

Self-determined people act volitionally by making conscious choices and decisions based

on their preferences, values, and beliefs (Shogren et al., 2017). These choices are made without *undue* external influence, meaning that support from trusted allies (e.g., friends, family members, teachers) is still critical to enable intentional and deliberate choices and decisions. The construct of volitional action includes two component constructs: autonomy (acting based on one's preferences, interests, beliefs, and values without undue outside influence) self-initiation (initiating actions to identify a goal using past experiences as a guide; Shogren, Wehmeyer, Palmer, Forber-Pratt, et al., 2015). In addition, self-determined people act agentially, planning actions to work towards goals (Shogren, Wehmeyer, Palmer, Forber-Pratt, et al., 2015). Through this process, self-determined people identify pathways that lead to a specific, intended outcome or create the change they want in their lives. By thinking about different pathways to achieve their goals, self-determined people self-regulate and self-direct the goal attainment process. As such, agentic action involves two component constructs: self-direction (directing actions toward goals and responding to challenges along the way) and pathways thinking (identifying different ways to solve problems while working towards goals; Shogren et al., 2017). A final critical aspect of self-determination is recognizing one's own abilities that support goal achievement, or acting with action-control beliefs. There are three component constructs related to action-control beliefs: psychological empowerment (believing one can achieve their goals when they try), self-realization (utilizing knowledge of personal strengths to work towards goals), and control-expectancy (believing one can use available resources and supports to achieve their goals; Shogren et al., 2017).

The emergence of Causal Agency Theory created a need for a new assessment that integrates knowledge from fields of education and psychology on how adolescents and young adults develop self-determination. To address this area of need, Shogren, Little, et al. (2018)

described the development and validation of the *Self-Determination Inventory: Student Report* (SDI:SR; Shogren & Wehmeyer, 2017). The 21 items of the SDI:SR represent the three essential characteristics of self-determined action (volitional action, agentic action, and action-control beliefs) as well as the associated component constructs (Table 6 provides sample SDI:SR items per component construct). Through confirmatory factor analysis (CFA), items and scores on the SDI:SR were shown to be reliable and valid across students aged 13 to 22 with varying disability labels (i.e., no disability, learning disabilities, intellectual disability, autism spectrum disorders, other health impairments) and from diverse racial/ethnic backgrounds (i.e., White/European American, African American/Black, Hispanic/Latinx, Other). Further analyses demonstrated that differences in student personal characteristics (i.e., disability status, race/ethnicity; Shogren, Shaw, et al., 2018) impacted self-determination across disability and racial/ethnic groups. Specifically, White/European American students without disabilities consistently scored highest on the SDI:SR compared to adolescents from other racial/ethnic backgrounds and with disabilities, which was hypothesized to result from differential opportunities and supports for self-determination provided by support systems (e.g., schools). These findings from the SDI:SR validation aligned with previous research that has suggested an interactive effect of disability and race/ethnicity on student self-determination scores (Shogren et al., 2014; Shogren & Shaw, 2017), reinforcing the ongoing need to consider how to deliver effective, tiered self-determination instruction to benefit all students in inclusive educational environments.

The Self-Determined Learning Model of Instruction

The *Self-Determined Learning Model of Instruction* (SDLMI; Shogren, Raley, et al., 2018; Wehmeyer et al., 2000) is a model of instruction aligned with Causal Agency Theory,

designed to enable general and special education teachers to promote causal agency by supporting students to learn to actively direct their goal setting and attainment, solving problems encountered as they take actions in service of their goals. During SDLMI instruction, students build their capacities to engage in volitional and agentic actions and develop more adaptive action-control beliefs. Researchers have suggested the efficacy of the SDLMI in producing positive student outcomes, including enhanced self-determination (Shogren, Burke, et al., 2018; Wehmeyer et al., 2012), access to the general education curriculum for students with disabilities (Agran et al., 2001), and academic- and transition-related goal attainment (Shogren, Burke, et al., 2019; Shogren et al., 2012). The majority of studies that have investigated the impact of the SDLMI have targeted students with disabilities (Hagiwara et al., 2017); however, the potential benefits of implementing the SDLMI for all students, inclusive of students with disabilities, has been demonstrated in recent, small-scale research.

Raley et al. (2018b) explored the impact of implementing the SDLMI in two Algebra I classes in which the mathematics general education teacher was struggling to engage all students in actively monitoring and regulating their learning. After one semester of SDLMI implementation led by the general education teacher with support from research staff, student participants in both classes were able to identify and set goals to facilitate their academic learning (e.g., “I will highlight important parts of my notes after each math class”), after instruction and support from the teacher on what those goals could look like and how they could support achievement (see Raley et al. 2018a for more information on whole-class SDLMI implementation). Further, over 90% of students reported achieving expected or higher levels of attainment of these goals and the teacher reported high engagement with the intervention and meaningful outcomes beyond goal attainment. Although findings from Raley et al. (2018b)

suggested the potential benefits of implementing the SDLMI in inclusive, secondary classrooms, analyses were restricted given the small sample size and short implementation timeframe (i.e., one academic semester lasting approximately 16 weeks). Specifically, it was not possible to compare differences in the change in self-determination across students with and without disabilities or over time, which is an important limitation of this pilot work.

Purpose

To address the areas of needed research identified by Raley et al. (2018b), the present study reports the findings from the examination of the impact of the SDLMI on student self-determination when implemented in inclusive, secondary core content classrooms as a Tier 1 intervention across a full academic year with a larger sample of students with and without disabilities. The following research questions guided this analysis:

1. To what degree does student self-determination change across an academic year when students engage in the SDLMI in inclusive, secondary classrooms?
2. What is the moderating impact of disability status on the relationship between SDLMI implementation and student self-determination?

Method

Sample and Setting

The sample included 992 high school students and 17 general and special education teachers. Students and teachers were recruited from six high schools across two states in the Mid-Atlantic during the 2018-2019 academic school year, with a focus on ninth grade core content classes. As such, the majority of students were in enrolled in ninth grade ($n = 951$, 95.9%), with a small number of students in higher grades ($n = 26$, 2.6%) but still enrolled in ninth grade core content classes. The six high schools were the first of three cohorts of schools

recruited to participate in a three-year, randomized controlled trial (RCT) comparing the impact of different types of implementation supports (online versus online + coaching) for SDLMI implementation on student (e.g., self-determination, goal attainment, academic achievement) and teacher (e.g., knowledge, skills, and usefulness of self-determination) outcomes when implemented in inclusive, general education classes. The data used for the present analysis is from the multi-year RCT, specifically data collected on student self-determination during the first year of implementation for the first cohort of schools.

As the focus of the larger project was comparing the impact of different types of implementation supports over the three years of the project, schools were randomly assigned when they entered the project to receive either online or online and coaching supports. Previous analyses using data from the first year of this RCT have reported positive changes in teacher knowledge, skills, and usefulness of self-determination as a result of initial professional development training (Bojanek et al., 2020) and SDLMI implementation fidelity during the first semester of implementation (Shogren et al., 2020), but this is the first analysis examining the changes in self-determination across students with and without disabilities as a result of engaging in SDLMI in inclusive, general education classrooms as a Tier 1 intervention.

Table 7 provides student demographic information obtained from district data. In the student sample, there were 526 (53.0%) males and 460 (46.4%) females. Forty-three percent of students identified as White/European American ($n = 427$) followed by African American/Black ($n = 396$, 39.9%), Hispanic or Latinx ($n = 91$, 9.2%), and two or more races ($n = 31$, 3.1%). Almost 20% of the sample had an Individualized Education Program (IEP; $n = 185$, 18.6%) as reported by district data. The largest disability category was learning disabilities ($n = 108$, 10.9%) followed by other health impairment ($n = 41$, 4.1%) and autism spectrum disorder ($n =$

13, 1.3%). Teacher implementers included trained general ($n = 12$) and special education teachers ($n = 5$) across English Language Arts (ELA; $n = 20$) or Science ($n = 16$) classes. The majority of teachers identified as female ($n = 15$, 88.2%; male: $n = 2$, 11.8%) and White/European American ($n = 15$, 88.2%; African American/Black: $n = 1$, 5.9%; Hispanic/Latinx: $n = 1$, 5.9%). All teachers were certified in the subject areas they taught. The collaborative relationships across general and special education varied across schools. Specifically, two general education teachers (11.8%) indicated they did not collaborate at all with other teachers while the rest of the teacher sample partnered with other teachers to some extent by co-assessing student performance and progress ($n = 11$, 58.8%), co-planning lessons ($n = 9$, 52.9%), co-teaching some class sessions ($n = 9$, 52.9%), and co-teaching all classes ($n = 6$, 35.3%). Class sizes ranged from 13 to 29 students.

Intervention

All teachers participating in the RCT received a standardized, two-day SDLMI in-person training by self-determination experts in the summer prior to fall semester implementation. Following the in-person training, participating teachers received ongoing implementation supports (online or online + coaching) throughout the academic year based on random assignment at the school-level. Consistent with SDLMI implementation protocols (Shogren, Raley, et al., 2019), general and special education teachers were trained to provide two SDLMI, whole-class mini-lessons (e.g., approximately 15-minute instructional sessions) each week to explicitly teach students abilities and skills associated with self-determination. The SDLMI mini-lessons are grouped into three distinct phases: Set a Goal (Phase 1), Take Action (Phase 2), and Adjust Goal or Plan (Phase 3). Students are supported by teachers to solve an overall problem in each phase by answering four *Student Questions* which guide students in self-

regulating their actions (12 Student Questions total). Each Student Question is associated with *Teacher Objectives* that serve as a “road map” for teachers to implement instruction associated with the Student Question. To meet the targeted Teacher Objectives, teachers utilize *Educational Supports* (e.g., problem-solving instruction, self-monitoring instruction), which teaches students skills to make progress toward their self-selected goals. For example, in Phase 3 (Adjust Goal or Plan), teachers use Educational Supports, such as decision-making instruction, to meet the Teacher Objective of assisting students in deciding if their self-selected goal should remain the same or change during their next cycle of using the three phases of the SDLMI. In addition to the SDLMI mini-lessons, general and special education teachers were also trained to provide opportunities for students to reflect and use the self-determination abilities (e.g., problem solving, self-regulation, planning) they developed during instruction throughout the core content instruction delivered by the teacher.

Teachers engaged students in the three phases of the SDLMI once per semester, meaning that students worked through the entire SDLMI process in their core content class twice during the school year, setting and working toward two goals. This process was consistent with SDLMI implementation protocols, which emphasize the importance of repeated opportunities and experiences in setting a goal, taking action to achieve that goal, and self-evaluating the goal or plan. Fidelity of implementation data was collected for both mini-lessons and core content instruction. Fidelity data showed that teacher implementation fidelity was at expected levels across targeted dimensions (i.e., adherence, quality of delivery, and participant responsiveness) and consistent across the three phases of the SDLMI (Shogren et al., 2020).

Measures

The Self Determination Inventory: Student Report (SDI:SR; Shogren & Wehmeyer,

2017), a validated self-report measure of self-determination that is aligned with Causal Agency Theory (Shogren, Wehmeyer, Palmer, Forber-Pratt, et al., 2015), was utilized to collect data on student self-determination at the beginning (prior to intervention or baseline), middle, and end of the school year. As previously mentioned, the SDI:SR has demonstrated reliability for youth and adolescents aged 13 to 22 with a range of disability labels and races/ethnicities and is sensitive to differences across students (Shogren, Shaw, et al., 2018). Previous analyses have suggested the utility of a single-factor model of the data, given strong correlations between the three essential characteristics of self-determination (Raley et al., 2019). Students take the SDI:SR in a customized, online platform by responding to 21 items, providing responses using a slider scale that the computer scores between 0 (Disagree) and 99 (Agree). The custom online system includes embedded accessibility features (e.g., in-text definitions, audio playback). An overall self-determination score, as well as scores for the three essential characteristics defined by Causal Agency Theory, are automatically calculated and provided to students via a student-friendly report and saved in a secure data management system for tracking and analysis. At each timepoint (three in total), the SDI:SR took students approximately 10 minutes to complete.

Data Analysis

To answer the research questions, we employed multiple group confirmatory factor analysis (MG-CFA; Sörbom, 1974) to examine time invariance (Research Question 1) and structural equation modeling (SEM; Kline, 2010) to determine the moderating impact of disability status on the relationship between SDLMI implementation and student self-determination outcomes (Research Question 2). These analytic approaches allowed for (a) estimation of the hypothesized factor model for each group (i.e., students with and without disabilities) across time and (b) the examination of the structural relationship between measured

variables and associated latent constructs across groups. We assessed the merit of the hypothesized models using the root mean square error of approximation (RMSEA; Steiger & Lind, 1980), the standardized root mean square residual (SRMR; Jöreskog and Sörbom, 1981), the comparative fit index (CFI; Bentler, 1990), and the Tucker-Lewis index (TLI; Tucker & Lewis, 1973). Hu and Bentler (1999) recommend CFI and TLI values of 0.95 or greater, RMSEA values less than 0.06, and SRMR values of 0.08 or lower as indicative of a close-fitting model. However, researchers have recently suggested that when two widely applied model fit indices (i.e., RMSEA and CFI) differ, it may not be necessary for researchers to disregard the model as each index provides different information on model fit that must be considered in the context of a specific study (Lai & Green, 2016).

All models were executed in R version 3.5.1 using the *lavaan* package (Rosseel, 2012), using the robust maximum likelihood (MLR) estimator. Full information maximum likelihood (FIML) was used to handle missing data. Prior to investigating our research questions, we explored and ultimately decided to model self-determination as a single factor construct, consistent with past research (Raley et al., 2019), as the current data suggested high inter-factor correlations of the three essential characteristics of self-determined action (volitional action, agentic action, and action-control beliefs).

Measurement Invariance

The purpose of the measurement invariance testing is to examine the psychometric properties of the items to ensure the same construct (i.e., self-determination) is measured first across measurement timepoints (i.e., beginning, middle, and end of the academic year; Research Question 1) and then proceed to assessing if the same construct is measured across time and groups (i.e., students with and without disabilities; Research Question 2). Measurement

invariance testing involves three phases: (a) configural, (b) equal loadings (weak), and (c) equal intercepts (strong). Prior to estimating the configural model, the appropriate null or baseline model was estimated affording the opportunity to correctly estimate CFI and TLI, as these indices are computed relative to a null model (Little et al., 2007). The null model was then used to estimate a mean and variance for each of the observed variables. The first measurement invariance model involved constraining parameters to be the same across measurement timepoints (i.e., beginning, middle, and end of the academic year) to investigate Research Question 1 and then across timepoints and groups (i.e., students with and without disabilities) in a separate model to address Research Question 2. The fit statistic and the degrees of freedom were used to estimate CFI and TLI for a given model. However, because incremental fit are adversely affected by the presence of nonnormality in the data, we utilized scaling correction to address non-normal data conditions (Brousseau-Liard & Savalei, 2014). Specifically, nonnormality decreases the mean value of fit indices, making model fit appear worse than it truly is and the correction allowed for the estimation of robust versions of CFI and TLI and resulted in mean values of the fit indices that were closer to the population values they were estimating.

The configural model tests whether the pattern of fixed and free parameters is the same across measurement timepoints and then each group (i.e., students with disabilities versus students without disabilities). If the configural model has acceptable model fit, weak invariance tests are undertaken to assess whether the factor loadings can be constrained across timepoints and groups. In the final step, strong invariance tests whether the intercepts (or expected values) are the same, demonstrating the same mean and intercept structure across groups and/or time at the measurement level. Both weak and strong invariance is established when only a small decrease in the acceptability of model fit (i.e., change in CFI) is observed after constraining the

factor loadings (weak invariance) or intercepts (strong invariance) to be the same across groups. Cheung and Rensvold (2002) recommended a change in CFI of less than or equal to 0.01 as an indication that the constraint, or particular phase of measurement invariance testing, is tenable. Proceeding through the measurement invariance steps outlined above and passing is a necessary condition before beginning to model group (i.e., students with disabilities versus students without disabilities) and time differences on the latent constructs (i.e., latent variances and means). The strong model is used to test latent means and variances across groups and over time.

Factorial Invariance

To examine differences across measurement timepoints (i.e., beginning, middle, and end of year self-report of self-determination) and then time and groups (i.e., students with and without disabilities), latent invariance testing was employed. Chi-square difference tests were used to evaluate invariance, or if there are differences between groups and/or across time. Because MLR was used in this analysis, a scaling correction was utilized to better approximate chi-square under non-normality (Satorra & Bentler, 2010). Additionally, in this analysis, a marker variable method was used across models during latent invariance testing whereby one factor loading is set to 1.0 and the corresponding intercept was set to 0.0 to scale the models with respect to the observed data.

The first step in latent invariance testing is to test latent variances by systematically constraining variances across time and groups (Little, 1997, 2013). The omnibus test involves constraining all latent variances across time and groups to be the same to assess if there were differences across groups and/or over time simultaneously. If the omnibus test indicates this constraint is untenable, then differences are investigated by group and then by time. This

process was replicated to test the latent means across groups and time and if either variance or means were determined to be different from one another, chi-square tests were utilized to identify specific differences in either groups or time. A latent effect size (*latent d*; Hancock, 2001), interpreted similarly to effect size Cohen's *d*, was calculated to determine the magnitude of any differences found in chi-square tests. Latent *d* is estimated via:

$$Latent\ d = \frac{\alpha_{2j} - \alpha_{1j}}{\sqrt{\frac{n_1\psi_{1j} + n_2\psi_{2j}}{n_1 + n_2}}}$$

where α_{1j} refers to the latent mean of the first group (e.g., first timepoint at the beginning of the year) which is subtracted from α_{2j} , the latent mean of the second group (e.g., second timepoint at mid-year). The denominator computes the pooled standard deviation ($\sqrt{\psi_{pooled}}$) of the two groups with the size of the group determining the proportion of variance each group contributes to the statistic. Lastly, the significance of the relationships between the measurement timepoints (i.e., SDI:SR scores at the beginning, middle, and end of the academic year) were examined using beta pathways.

Results

The purpose of the present analyses was to examine the impact of the SDLMI on student self-determination when implemented in inclusive, secondary core content classrooms as a Tier 1 intervention across a full academic year and examine potential differences in the change in student self-determination as a result of intervention across students with and without disabilities. As mentioned previously, we identified that a single factor model best represented self-determination due to the high inter-correlations between the three essential characteristics of self-determined action across measurement timepoints (i.e., beginning, middle, and end of the academic year), ranging from 0.940 and 0.988. This finding aligns with previous research that

has suggested a strong relationship between the three essential characteristics of self-determined action (Raley et al., 2019). All subsequent models used a single-factor solution.

Research Question 1: Change in Student Self-Determination Across an Academic Year

Table 8 provides overall descriptive statistics across measurement timepoints and groups of students with and without disabilities. A cursory examination of the SDI:SR means across time suggested a small degree of net change across measurement occasions; however, in general, the SDI:SR scores of the full sample decreased from the first timepoint (baseline) to the second timepoint (middle of the year), and then increased again to near baseline levels at the end of the year. These descriptive data suggested the importance of focusing on the variance components inherent in modeling student self-determination across time. As such, we next examined measurement invariance across time in a CFA modeling framework. The configural model for time invariance demonstrated adequate fit ($\chi^2 = 4768.234$, $df = 1824$). As shown in Table 9, the time measurement invariance models demonstrated weak (i.e., loading) and strong (i.e., intercept) invariance, as the change in CFI was less than 0.01 for each step. However, it is important to note that the CFI and TLI across measurement invariance testing stages did not consistently meet the criteria for acceptable model fit put forth by Hu and Bentler (1999; i.e., values of 0.95 or greater). Nevertheless, we proceeded with this analysis as observed RMSEA values met stated criteria (i.e., less than 0.06) and disagreement across model fit indices is a common occurrence (Lai & Green, 2016). Passing time measurement invariance suggested that the same self-determination construct was measured across measurement timepoints (i.e., beginning, middle, and end of the year).

To assess change across timepoints in the latent mean of overall self-determination, the final model (strong) was used. At the second timepoint (i.e., middle of the academic year), the

latent mean decreased by 0.207 (SE = 0.041) in comparison to the first (baseline) timepoint. The latent d computed with respect to the change in latent means from the baseline to second timepoint (-0.009) indicated no effect based on effect size criteria (i.e., less than 0.2 indicates no effect; Cohen, 1988). Similarly, the latent mean of the third timepoint (collected at the end of the academic year) demonstrated a decrease of 0.074 (SE = 0.043) compared to the first timepoint and the computed latent d (0.003) also indicated no effect. Overall, the pattern observed in change in student self-determination over the academic year indicated the latent mean slightly decreased after the first timepoint and then increased slightly although not to the same level as was assessed at the beginning of the year, although these were very small changes. These analyses, however, do not explore variability in the data or the impact of other factors, such as disability status.

Research Question 2: Impact of Disability Status on Student Self-Determination

To explore the moderating impact of disability status on the relationship between SDLMI implementation and self-determination outcomes, the same model from time invariance testing (Research Question 1) was utilized and the data separated into two groups (i.e., students with disabilities and students without disabilities). The configural model for the two groups demonstrated acceptable model fit with respect to RMSEA, but not CFI and TLI criteria. Therefore, we proceeded with testing per Lai and Green (2016). Table 9 demonstrates that weak and strong invariance was established across disability groups and time based on RMSEA model fit criteria, but not based on CFI and TLI criteria. This suggests that the same construct of self-determination was measured across timepoints and groups of students with and without disabilities. We then employed the use of a marker variable method to assess differences in the latent means and variances across groups, using chi-square difference tests to evaluate factorial

invariance. Table 10 provides the results of this latent invariance testing. Findings indicated that both the latent variances and means were invariant across groups of students with and without disabilities; however, these parameters changed over time. In other words, student self-determination changed over time, but the pattern of change was constant across the groups of students with and without disabilities. We also tested for invariance in the beta pathways across students with and without disabilities to identify if there were differences in groups in the predictive relationships between measurement timepoints. As shown in Table 10, we found that the beta pathways were invariant across groups. As shown in Figure 4, self-determination as measured by the SDI:SR at the beginning of the school year predicted SDI:SR in the middle of the year ($\beta = 0.631; p < .000$), which predicted SDI:SR at the end of the year ($\beta = 0.563; p < .000$). Thus, students with and without disabilities did not differ in their self-determination and the pattern of change over time was the same across groups.

Discussion

Researchers have established the relationship between promoting self-determination in secondary school and positive in-school (e.g., academic goal attainment) and postschool (e.g., employment) outcomes, particularly for students with disabilities (Algozzine et al., 2001; Burke et al., 2018). Given the importance of self-determination for all students (Shogren et al., 2016), the purpose of this study was to examine the impact of an evidence-based intervention, the SDLMI, when provided as a universal, Tier 1 support in inclusive, general education classrooms.

Overall Implications for Practice and Research

Previous research has typically measured self-determination at the beginning and end of an academic year (pre/post assessment; e.g., Shogren, Burke, et al., 2019; Wehmeyer et al., 2012), therefore the findings of this study are novel, in that they allow for a greater

understanding, with three data collection points, of the mid-year impacts of self-determination interventions across students with and without disabilities. The findings suggested an interesting pattern. Specifically, while self-determination status at each timepoint predicts self-determination status at a later time point, there are trends in the data that do not suggest a completely linear growth pattern. There was a pattern of small decreases in self-determination scores from the beginning to the middle of the year across students with and without disabilities. By the end of the year, however, self-determination scores rose back to near baseline levels. While these differences are relatively low in their effect sizes when looking at the overall data, they are significant in the multi-group model across students with and without disabilities. As previous research findings have generally suggested no differences in self-determination until at least second year of intervention with comprehensive interventions like the SDLMI, the current results suggest that there may be slight, observable changes in student self-determination during the first year of intervention that follow a pattern that might not typically be hypothesized. That is, student self-perceptions of self-determination abilities may show an initial drop after instruction is initiated.

Although more research is needed to explore this pattern, it aligns with anecdotal reporting from teachers and students that suggests that initiating instruction in self-determination provides students with opportunities to self-reflect and learn more about their abilities to make decisions about their goals (volitional action), engage in actions toward a self-selected goal (agentic action), and enhance their beliefs about their abilities to achieve goals that are important to them (action-control beliefs). As such, beginning a comprehensive self-determination intervention, like the SDLMI, may lead to students recalibrating how they perceive their self-determination abilities. Therefore, the slight decrease in the latent mean at the second timepoint

could reflect students learning more about themselves and their self-determination abilities during the first semester of engaging in the SDLMI. In other words, this dip in self-reported self-determination could reflect a more realistic and informed perspective of their own self-determination that then enables the growth back to baseline levels by the end of the year, and as has been found in previous studies, significant growth in the second and third years of exposure to the SDLMI (e.g., Shogren, Hicks, et al., in press; Wehmeyer et al., 2012).

Changes in Self-Determination Over Time

Additional research should further attempt to replicate observed patterns of change in self-determination over time, and explore if more frequent data collection could further elucidate patterns. Future research should also explore changes in self-determination over longer periods of time and in relation to other indicators of skill acquisition (e.g., goal attainment, academic achievement) in the short and long-term. One focus of ongoing analyses in the larger RCT will be attempting to replicate these patterns in new students cohorts, as well as exploring relationships between changes in self-determination and other outcomes over time as some students will be followed up to three years; however, replication by other research teams will be critical to advancing knowledge in the field. Ongoing work in this area could lead to recommendations for training implementers (e.g., general and special education teachers) in designing instruction and supports to promote student self-determination throughout a school year. For example, data collected at baseline and after a student's first time completing the SDLMI intervention (mid-year) could be used to identify additional instruction, opportunities, and/or experiences to enhance students' self-determination going into second semester of instruction. This could include the provision of targeted SDLMI Educational Supports (e.g., decision-making instruction), honing in on specific skills and abilities associated with self-

determination identified as changing or not changing through assessment. Additionally, given previous research suggesting significant differences between student- and teacher-reported perceptions of student self-determination, specifically that teacher respondents tend to report that adolescents had significantly lower levels of self-determination on the Self-Determination Inventory at baseline than students (Shogren, Henning, et al., in press), exploring if these discrepancies between student and teacher reports might change over time would inform understandings of teacher and student perceptions of self-determination that could inform instructional supports.

Further, the overall low net change in self-determination across one year could be influenced by the relatively short duration and intensity of SDLMI instruction when delivered as a Tier 1 intervention. The recommended instructional time per SDLMI mini-lesson in inclusive, core content settings is 15 minutes, twice a week (Shogren, Raley, et al., 2019). This is less than other, more intensive applications of the SDLMI when it is delivered in in small-group or individual instructional contexts (e.g., Wehmeyer et al., 2013). It is possible that combining Tier 1 instruction with more intensive supports (i.e., Tier 2 or 3 instruction) for students who need those supports could more significantly enhance overall self-determination over time. We did not explore different responses to intervention or clustering in the data, aside from disability, that could inform the need for intensification. This should be addressed in future research. However, it may also be that it simply takes time and repeated exposure to opportunities to learn and use self-determination abilities, particularly when instruction begins in high school, to lead to significant changes. This is consistent with theoretical frameworks for the development of self-determination, which suggest it is a developmental process that requires opportunities and experiences to build and practice skills and abilities associated with self-determination (e.g.,

decision making, problem solving; Shogren, Wehmeyer, Palmer, Rifenbark, et al., 2015).

Findings from previous research align with this as well; for example, as mentioned previously, Raley et al. (2018b) found small, but positive, effects sizes in change in student self-determination after using the SDLMI as a Tier 1 intervention in inclusive, mathematics general education classes over an academic semester (approximately 16 weeks), and others have found it takes two or more years for moderate to large effect sizes to be found (e.g., Shogren, Hicks, et al., in press; Wehmeyer et al., 2012). As such, ongoing work is needed to identify best practices around intensifying self-determination instruction, as there has been little integration of efforts to deliver the SDLMI as a Tier 1 alongside Tier 2 or 3 interventions, as needed based on assessment data.

Differences in Self-Determination Based on Disability Status

Another interesting finding was that students with and without disabilities did not differ in their self-determination scores at each measurement timepoint. Further, the pattern of change over time was consistent across the two groups, as was the degree to which self-determination status at one time point predicted self-determination status at a later time point. This finding differs from previous research that has suggested disability-related differences in self-reported self-determination at baseline (Shogren, Shaw, et al., 2018). However, it is important to note that this study took place in inclusive classrooms and the majority of the students had relatively low support needs compared to previous research that has utilized the SDLMI in resource and/or self-contained contexts with students with more extensive support needs (Algozzine et al., 2001; Burke et al., 2018). Therefore, future research should examine the benefits of Tier 1 intervention to promote self-determination with a more diverse sample of students with varying levels of support needs in inclusive settings to more robustly explore the moderating impact of disability

status and identify ways to intensify instruction as needed. This research would not only advance access to inclusive opportunities for student with more extensive support needs but would also be consistent with integrated systems of supports frameworks (Sailor, 2008-2009) and equity-based education (Artiles & Kozleski, 2016).

Overall, though, the current findings from the first year of the larger RCT suggests that students with disabilities that are in inclusive, general education core content classes showed the same patterns of change in self-determination as their peers without disabilities over time. This suggests that the SDLMI can be implemented to advance college and career readiness frameworks for all students (Conley, 2012; Test et al., 2009). As ongoing data collection occurs as a part of this project and others, further exploring the longer-term impacts on academic achievement, graduation, and other postschool outcomes will be necessary to fully evaluate the impact of the SDLMI on transition outcomes as will exploring differences across students with and without disabilities, given the highly disparate postschool outcomes for students with disabilities (Newman et al., 2011; Nord et al., 2015).

Limitations and Future Research

Several limitations should be considered when interpreting the results of this study to guide future research. First, although the interactive effect of disability and race/ethnicity on student self-determination scores has been documented (Shogren et al., 2014; Shogren & Shaw, 2017), this analysis did not examine both disability and race/ethnicity due to the relatively small sample sizes of students with disabilities across diverse racial/ethnic groups. Future research is needed that examines the impact of the SDLMI on student self-determination with a larger sample of students with and without disabilities from diverse racial/ethnic groups as race/ethnicity is rarely considered in existing research (Hagiwara et al., 2017; Shogren, 2011).

Second, although a focus of the larger RCT is exploring different types and intensities of implementation supports for general and special education teachers' as they implement the SDLMI (i.e., online versus online + coaching supports), the small sample size available from the first year of data collection (as the overall study uses a cohort model to phase in schools) precluded analyzing the impact of implementation supports for teachers in the first year. Examining the differential impact of implementation supports is imperative in future work as experts in implementation science posit that the adoption, utilization, and implementation of evidence-based practices in school systems is enhanced with sustained, systematic supports (Fixsen et al., 2005; Odom et al., 2014), and the lack of ability to account for the different supports provided to teacher implementers may have influenced the findings. Therefore, future research, including upcoming years of the larger RCT, should compare the impact of different types and intensities of implementation supports on student outcomes to provide guidance on how to effectively support the sustainability of evidence-based practices to promote self-determination in school contexts.

Lastly, as noted in the results, the model fit results from this study did not pass the CFI and TLI criteria for acceptable fit as put forth by Hu and Bentler (1999). However, we elected to proceed with the analysis given the acceptable RMSEA indices and recent research indicating the strong likelihood of potential differences in model fit across common indices based on study design (Lai & Green, 2016). To address these model fit issues, future research should explore if increasing the disability sample size and/or ensuring more equal sample sizes across groups of students with and without disabilities would lead to a more robust examination, thereby resulting in improved model fit as assessed by CFI and TLI.

Conclusion

More work is needed to explore the longitudinal impact of the SDLMI on student self-determination as well as other critical in-school and postschool outcomes when implemented in inclusive, general education classrooms as a Tier 1 intervention. The analyses presented suggest relatively small change in overall self-determination during the first year of a multi-year intervention, but interesting patterns of change were replicated across students with and without disabilities. Specifically, findings suggest the utility of adding at least a mid-year data collection timepoint in future research to allow for more nuanced detection of changes in self-determination, particularly during the first year of instruction in these skills and abilities. Overall, the results provide preliminary evidence that the SDLMI can be potentially implemented in general education classrooms as a Tier 1 intervention for all students, leading to similar outcomes for students with and without disabilities. Continuing to consider how to create integrated systems of supports within secondary schools to address complexities with implementing whole-school interventions with fidelity (Sailor, 2008-2009) has significant implications for interventions to enhance self-determination abilities, shifting the focus to the distribution of evidence-based supports and services to enable all students to successfully engage in the learning process and achieve meaningful postschool outcomes.

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Table 6*Overview of Causal Agency Theory and Sample SDI:SR Items*

Essential Characteristic	Component Construct	Example SDI:SR item
Volitional Action	Autonomy	I choose activities I want to do.
	Self-Initiation	I look for new experiences I think I will like.
Agentic Action	Pathways Thinking	I think of more than one way to solve a problem.
	Self-Direction	I think about each of my goals.
Action-Control Beliefs	Control-Expectancy	I have what it takes to reach my goals.
	Psychological Empowerment	I keep trying even after I get something wrong.
	Self-Realization	I know my strengths.

Note. SDI:SR = *Self-Determination Inventory: Student Report*. Reprinted with permission from Shogren, Little, et al. (2018).

Table 7*Sample Demographics*

	N = 992	
	n	%
Grade		
9th	951	95.9
10th	22	2.2
11th	3	0.3
12th	1	0.1
Missing	15	1.5
Gender		
Male	526	53.0
Female	460	46.4
Missing	6	0.6
Race/Ethnicity		
White/European American	427	43.0
African American/Black	396	39.9
Hispanic or Latinx	91	9.2
Two or more races	31	3.1
Asian American	30	3.0
American Indian/Alaska Native	5	0.5
Hawaiian Native or Pacific Islander	3	0.3
Missing	9	0.9
Disability		
No disability	803	80.9
Learning disabilities	108	10.9
Other health impairment	41	4.1
Autism spectrum disorder	13	1.3
Emotional or behavioral disorder	6	0.6
Intellectual disability	5	0.5
Speech language impairment	5	0.5
Physical disabilities	2	0.2
Traumatic brain injury	2	0.2
Hearing impairment	1	0.1
Missing	6	0.6
Individualized Education Program (IEP) status		
No	803	80.9
Yes	185	18.6
Missing	4	0.4
English language learner (ELL) status		
No	951	95.9
Yes	27	2.7
Missing	14	1.4
Free and reduced price lunch status		

No	489	49.3
Yes	453	45.7
Missing	50	5.0

Note. The total of percentage for each characteristic may not be 100% due to rounding.

Table 8*Descriptive Statistics Across Measurement Timepoints and Groups*

Variable	N	Mean	SD
SDI:SR (Time 1)	739	79.82	13.790
No disability	611	79.96	13.481
Disability	127	79.20	15.264
SDI:SR (Time 2)	687	77.91	14.983
No disability	561	78.02	14.985
Disability	123	77.38	14.983
SDI:SR (Time 3)	586	79.42	15.763
No disability	480	79.47	15.417
Disability	103	79.44	17.222

Table 9*Measurement Invariance Testing*

Model	Chi-Square	df	Scaling factor	RMSEA	CFI	TLI	SRMR	Δ CFI	Tenable?
Measurement Model (across time)									
Baseline	28508.718	2037	1.357	-	-	-	-	-	-
Configural	4768.234	1824	1.324	0.036	0.909	0.898	0.043	-	-
Weak	4840.935	1864	1.337	0.036	0.909	0.900	0.047	0.000	Yes
†Strong	5018.253	1904	1.330	0.036	0.903	0.897	0.048	-0.006	Yes
Measurement Model (across groups)									
Baseline	32316.430	4116	1.227	-	-	-	-	-	-
Configural	8215.908	3732	1.196	0.045	0.862	0.848	0.070	-	-
Weak	8205.200	3748	1.196	0.045	0.863	0.850	0.058	0.001	Yes
†Strong	8503.526	3848	1.190	0.046	0.856	0.846	0.059	-0.007	Yes

Note. † indicates final model. df = degrees of freedom; RMSEA = root mean square error approximation; CFI = comparative fit index; SRMR = standardized root mean square residual; TLI = Tucker-Lewis index.

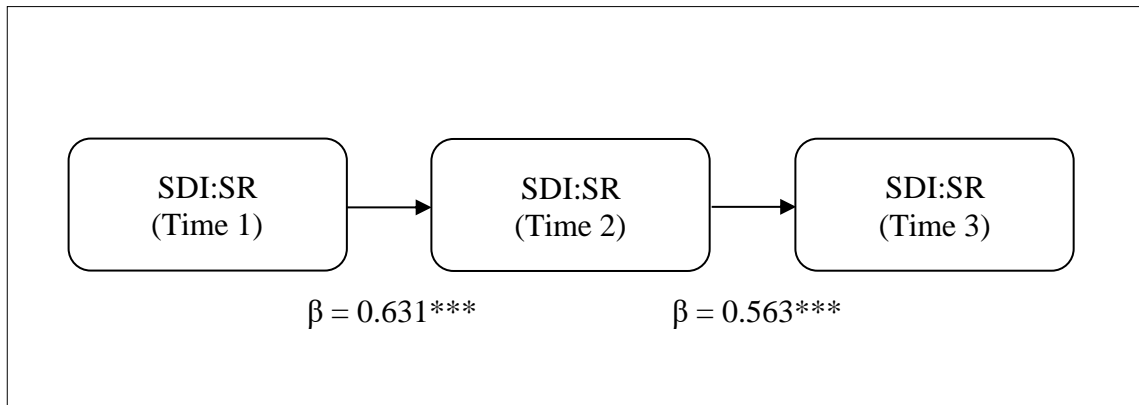
Table 10*Invariance Testing of Latent Parameters*

Model	χ^2	df	p	$\Delta \chi^2$	Δdf	RMSEA	CFI	TLI	SRMR	Tenable?
Variance-omnibus	8527.030	3853	0.018	13.656	5	0.046	0.856	0.846	0.072	No
Group	8505.751	3851	0.369	3.148	3	0.046	0.856	0.846	0.060	Yes
Time	8526.212	3852	0.015	12.359	4	0.046	0.856	0.846	0.071	No
Means-omnibus	8536.258	3853	0.000	28.447	5	0.046	0.855	0.845	0.060	No
Group	8503.720	3851	0.801	1.000	3	0.046	0.856	0.846	0.059	Yes
Time	8536.172	3852	0.000	27.970	4	0.046	0.855	0.845	0.060	No
Betas-omnibus	8503.609	3848	--	--	--	0.046	0.856	0.846	0.059	--
Group	8508.759	3851	0.253	4.080	3	0.046	0.856	0.846	0.061	Yes

Note. The strong invariance model acted as baseline model for testing variant means between groups. df = degrees of freedom; RMSEA = root mean square error approximation; CFI = comparative fit index; SRMR = standardized root mean square residual; TLI = Tucker-Lewis index.

Figure 4

Significant Beta Pathways in the Structural Model Across Time and Groups



Note. $***p = .001$.

Chapter 5: Conclusion

Promoting student self-determination – or supporting students to develop abilities and skills that enable them to act or cause things to happen as they set and works toward goals – has been emphasized as a way general and special education teachers can design their instruction to enhance student motivation and engagement in academic learning (Niemic & Ryan, 2009; Shogren et al., 2014). Causal Agency Theory, a theoretical framework that describes the development of self-determination, guided the research activities in this dissertation and defines self-determination as a “dispositional characteristic manifested as acting as the causal agent in one’s life” (Shogren et al., 2015, p. 258). To effectively enhance self-determination, an evidence-based practice (EBP) to promote self-determination, the *Self-Determined Learning Model of Instruction* (SDLMI; Shogren et al., 2018; Wehmeyer et al., 2000), has been developed and extensively utilized in secondary settings to promote student outcomes (e.g., academic and transition goal attainment, postschool employment; Hagiwara et al., 2017). However, implementing EBPs in complex environments (e.g., secondary school contexts) with high fidelity requires the identification and provision of systematic supports for implementation (Fixsen et al., 2005), such as coaching for implementers. To this end, the results of this dissertation inform future directions for research and practice related to implementation supports needed to effectively utilize intervention to promote self-determination in inclusive, general education classrooms supporting all students.

The findings provide directions for ongoing research and practice related to addressing student support needs in understanding and promoting self-determined action, particularly within a tiered model of support framework to engage all students in the learning process. Tiered models of support are generally premised on providing high-quality, universal supports for all

students (i.e., Tier 1 supports), with more intensive supports for students to learn and participate in the curriculum and address learning needs (i.e., Tiers 2 and 3 supports). The results of the present analyses suggest ongoing work is still needed in both research and practice related to understanding and supporting how to implement interventions designed to promote self-determination, like the SDLMI, in inclusive, general education classrooms as a Tier 1 intervention and identify how to integrate Tier 1 instruction with Tiers 2 and 3 supports to enhance outcomes. These research directions should be further explored in context of the multi-year randomized controlled trial (RCT) in which the data analyzed in this dissertation stem from as well as research by other teams.

Results from the review of the literature on existing research on coaching in inclusive, secondary classrooms in Chapter 2 suggest that ongoing work is critically needed examining the impact of coaching in secondary contexts. Namely, several significant gaps in the knowledge base emerged, highlighting the ongoing need to attend to issues that impact the quality of research, including methodological soundness and reporting as well as challenges associated with conducting research in complex, secondary school contexts. The small number of included studies ($n = 12$), particularly in comparison to the body of research in early childhood and elementary education, demonstrate a need for more research examining the use of coaching supports in inclusive, secondary classrooms. Future research must focus on better describing and testing the features of effective coaching supports in inclusive, secondary classrooms to advance knowledge, skills, and implementation fidelity of EBPs and advance implementer and student outcomes. Findings from Chapter 3 indicate that the vast majority of goals that students with and without disabilities set during their first semester of engaging in the SDLMI focused on academic learning (92.9%) as opposed to other areas (e.g., extracurricular activities; 7.1%),

suggesting that the SDLMI can be used to promote academic-related goal setting, particularly when delivered in inclusive, general education classes. Additionally, minimal differences across goals set by students with and without Individualized Education Programs (IEPs) and across teacher implementation support groups were observed, suggesting that students with and without IEPs learning in inclusive, general education classrooms identify similar areas of needed improvement and the potential benefit from engaging in the goal-setting process as a Tier 1 intervention. Future research, including subsequent years of the large RCT and replications by other research teams, should explore if these findings maintain as students develop abilities and skills associated with self-determination as they iteratively engage in the SDLMI across academic semesters.

The pattern of minimal differences observed across students with and without disabilities was further exemplified in Chapter 4 as results suggested that after engaging in the SDLMI in inclusive, secondary classrooms, students with and without disabilities did not differ in their self-determination scores at each measurement timepoint (i.e., beginning, middle, and end of the academic year). However, the majority of the students had relatively low support needs and future research should examine the benefits of Tier 1 intervention to promote self-determination with a more diverse sample of students with varying levels of support needs in inclusive settings to more robustly explore the moderating impact of disability status and identify ways to intensify instruction through Tier 2 and 3 supports, as needed. Further, findings from Chapter 4 suggest the mid-year impacts of self-determination interventions across students with and without disabilities. Specifically, there was a pattern of small decreases in self-determination scores from the beginning to the middle of the year and then small increases from the middle to the end of the year across students with and without disabilities, suggesting that there may be slight,

observable changes in student self-determination. A possible explanation for this initial drop after instruction using the SDLMI was initiated could reflect students recalibrating how they perceive their self-determination abilities after engaging in one semester of a comprehensive intervention to promote self-determination. In other words, this pattern could suggest that students learned more about themselves and their self-determination abilities during the first semester and the mid-year timepoint reflected a more realistic and informed perspective of their own self-determination that then enables the growth back to baseline levels by the end of the academic year. Given the novelty of the Chapter 4 findings related to measurement timepoints using self-determination assessment, more research is needed to explore this pattern and changes in self-determination over longer periods of time and in relation to other indicators of skill acquisition (e.g., goal attainment, academic achievement) in the short and long-term.

In sum, the findings from this dissertation provide important information on effective implementation supports for teachers using the SDLMI in inclusive, general education settings to promote self-determination as well as goal setting and attainment, leading to enhanced postschool outcomes for students with and without disabilities. Such work is valuable given the importance of self-determination across college and career readiness frameworks developed for all students (Conley, 2012; Test et al., 2009). Consistent with calls from leaders in self-determination and systems change (Shogren et al., 2016), future research should explore how to create integrated systems of supports within secondary schools to address complexities with implementing whole-school interventions with fidelity to enhance self-determination abilities, shifting the focus to the distribution of evidence-based supports and services to enable all students to successfully engage in the learning process and achieve meaningful postschool outcomes.

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