Project STAY: Supporting Teachers of Autism in Years 1-3

This proposal was developed for consideration for the Research Training Programs in Special Education: Early Career Development and Mentoring competition (CFDA 84.324B). The research plan is aligned with the Development and Innovation project type and the Educators and School-Based Service Providers research topic. Through strategically selected career development activities, the mentorship of three senior faculty members—**Drs. Lee Kern** at Lehigh University, **Melinda Leko** at the University of Wisconsin-Madison, and **Jessaca Spybrook** at Western Michigan University—two consultants—**Drs. Samuel Odom** and **Ann Sam** at the Frank Porter Graham Child Development Institute, University of North Carolina at Chapel Hill—and an advisory board consisting of **Dr. Bonnie Billingsley** and school and district leaders, I propose to develop and test an induction program to support novice teachers (i.e., within their first three years of teaching) of students with autism spectrum disorder (ASD) in high-minority schools. The five core components of the induction program include (1) mentor support, (2) initial and ongoing training, (3) observation of exemplary teaching, (4) formative assessment of teaching practice, and (5) participation in a network. My primary outcomes of interest include novice teachers' level of burnout, self-efficacy, job satisfaction, teaching effectiveness, role conflict and ambiguity, and intention to stay in teaching. For students with ASD, outcomes include academic engagement and goal attainment. Through collection of both qualitative and quantitative data using the Iterative Process of Intervention Development (Kern et al., 2011), this project will result in a ***fully-developed, research-supported induction program*** for use by novice teachers of students with ASD working in high-minority schools that I plan to test on a larger-scale in a future IES Initial Efficacy study.

In addition to developing an induction program, this project aims to develop my skills as a researcher through targeted activities outlined in the Career Plan. Specifically, I aim to ***(a) increase my capacity to conduct school-based research, (b) develop expertise in mixed methods and group design research, and (c) enhance my skills in grant writing and publication***. These career goals are strategically timed to support different aspects of the research plan. For instance, in Phase 1 (Years 1-2), *Initial Development*, I will develop the program using a mixed methods approach by conducting classroom observations and focus groups and gathering stakeholder feedback from an advisory board on the essential components of STAY and the feasibility of implementing these components within high-minority schools. During Phase 2 (Year 3), *Design-Based Research and Iterative Model Development,* I will implement STAY using a pre-post, single group design, collect extensive feedback through teacher interviews, and refine and improve the program based on feedback. In the final phase (Year 4), *Pilot Efficacy Study*, I will use a randomized control trial (RCT) to evaluate the effectiveness of STAY. Throughout the project, I will work with my mentors to disseminate findings in top-tier peer-reviewed outlets and, in Year 4, I will develop an IES Initial Efficacy proposal to test STAY with a larger sample.

SIGNIFICANCE

The number of novice teachers has increased dramatically in the United States over the last three decades (Ingersoll et al., 2018) with 315,000 teachers currently in their first three years of teaching (Hussar et al., 2020). Without intervention, more than 96,000 of these teachers will leave the field, with a disproportionate number leaving from high-minority schools and special education positions (Ingersoll et al., 2018). When considering special education teachers working in high-minority schools, the results are even more grim, with turnover rates 80% higher for special education teachers working in schools with the greatest concentration of students of color

(Carver-Thomas & Darling-Hammond, 2017). Teachers of students with ASD are also at a greater risk of attrition due to the unique needs of this population (Jennett et al., 2003). Teaching students with ASD requires a unique skill set and knowledge of evidence-based practices (EBPs) that many teachers are not taught in their preservice programs (Finch et al., 2013), leading to a lack of knowledge and confidence about how to best meet student needs (Brock et al., 2014). Impairments in communication and reciprocal social interactions, a restricted repertoire of activities and interests, and high levels of challenging behavior make teaching students with ASD especially demanding (Busby et al., 2012) and have led some to proclaim that they are one of the most difficult groups of students to teach (White et al., 2012). These challenges put novice teachers of children with ASD at a significantly higher risk of stress and burnout (Boujout et al., 2017), factors strongly associated with attrition (Ruble et al., 2011), and make teacher support for intervention with this population especially critical.

Effects on Students. The effects of teacher stress and burnout do not just affect attrition; they are also detrimental to students. Students with ASD in classrooms of teachers who are experiencing high levels of stress and burnout are less engaged academically and have poorer long-term IEP outcomes, likely due to the negative impact that stress and burnout have on teaching quality (Wong et al., 2017). Attrition also negatively impacts student achievement outcomes, with the most significant effects seen in schools comprised of mostly economically disadvantaged students (Sorensen & Laddd, 2020). One possible reason for this discrepancy is the extraordinary costs associated with attrition. Every time a teacher leaves, school districts must expend resources on recruitment, hiring, administrative processing, orientation, and ongoing professional development (Barnes et al., 2007). For large urban school districts with a high rate of turnover, such as those with a high proportion of minority students, these costs add up quickly and can easily climb into the billions each year (Sutcher et al., 2019). Spending such an inordinate amount of money on replacing teachers detracts from spending on students' educational experiences and further exacerbates disparities in achievement among students of color (Barnes et al., 2007; Sorensen & Ladd, 2020). For example, in Pennsylvania, per pupil expenditures range from a mere $8,700 in high-minority districts with a high rate of turnover, to more than $26,000 in wealthier districts with a more stable teacher workforce (Pennsylvania Department of Education, 2015). To close the achievement gap among students of color, it is imperative to implement an effective retention strategy (Barnes et al., 2007).

STAY Components and Rationale for Project

The damaging effects of teacher attrition have been a topic of interest for more than 60 years (Charters, 1956); however, the dialogue surrounding these issues has failed to produce change. The rate of teacher attrition has held steady or slightly increased over the last 40 years (Ingersoll et al., 2018), contributing to the national teacher shortage. Induction programs have been shown to effectively reduce attrition (Ingersoll & Strong, 2011); however, the variability in quality and implementation has not resulted in long-term, wide spread retention (Goldrick, 2016). In order for induction programs to affect change, districts must do more than issue policy–they must use programs comprised of best practices in teacher induction and ensure they are implemented with fidelity (Goldrick, 2016).

Ensuring fidelity of implementation of induction programs in high-minority schools is especially challenging given the unique challenges these schools face. Due to the high turnover rate, special education teachers in these settings are substantially more likely to be inexperienced and more than three times as likely to be alternatively certified than special education teachers in low minority schools (Carver-Thomas, 2017). This reduces the number of teachers qualified to

be mentors (Kini & Podolsky, 2016), a critical component of induction programs (Ingersoll & Strong, 2011). It also increases the likelihood that mentors will need to be recruited from other fields or districts, potentially decreasing the number of times that mentor and novice teachers engage in mentoring sessions and consequently reducing the effectiveness of the mentor arrangement (Ingersoll & Strong, 2004). Other challenges unique to novice teachers of students with ASD include limited opportunities to collaborate with colleagues who share the same role given the relatively small number of teachers who teach students with ASD in a given school (Mason-Williams et al., 2020). Additionally, novice teachers of students with ASD are less likely to receive support from administrators with student concerns given most administrators' lack of training in special education (Billingsley et al., 2017), making support from a mentor with knowledge and experience of ASD even more important. Although challenging, it is possible to design a high-quality induction program that overcomes these barriers; however, it is imperative to involve stakeholders in the design process to ensure the induction program is feasible and acceptable to the stakeholders who will use it (Billingsley et al., 2019).

Component 1: Mentor Support. A central component of STAY is the use of mentors. STAY mentors will (a) be selected using rigorous selection criteria (e.g., 5+ years of teaching experience, positive teaching evaluations, excellent communication and interpersonal skills, etc.), (b) have experience teaching students with ASD, and (c) meet with novice teachers regularly, factors associated with increased effectiveness of the mentoring arrangement (Goldrick, 2016; Ingersoll & Strong, 2011). To address the logistical concerns with recruiting high-quality mentors who have experience teaching students with ASD in high-minority schools, mentor teachers participating in STAY will meet with novice teachers via distance technology for the majority of mentoring sessions. Given the challenges discussed previously, I anticipate the mentor teacher will be recruited from another school, and capitalizing on the benefits of distance technology will reduce the burden of frequent meetings by eliminating travel time.

During mentoring sessions, mentors will support novice teachers in five key areas: (1) goal setting, (2) progress towards goals, (3) problem solving, (4) securing resources, and (5) social and emotional support. Goal setting and monitoring progress towards goals guides the content of the mentoring session and ensures conversations are purposeful and feedback is relevant (Beek et al., 2019). Incorporating problem solving into the session helps novice teachers overcome challenges they are facing and reduces perceived role conflict and ambiguity, both of which affect burnout and are commonly experienced by novice special educators (Billingsley et al., 2019; Schwab & Iwanicki, 1982). Lack of access to resources is a common concern among teachers who leave the field (Carver-Thomas & Darling-Hammond, 2017) and is especially relevant to teachers in high-minority schools given the lack of resources in these settings (Sorensen & Ladd, 2020); as such, STAY mentors will purposefully plan to secure needed resources for novice teachers. Finally, mentors will offer social and emotional support to novice teachers by empathizing with their concerns and offering encouragement during mentoring sessions, strategies that novice teachers have identified as highly valuable (Shields & Murray, 2017) and are critical to fostering a trusting, collegial relationship (Ellis et al., 2020).

Component 2: Initial and Ongoing Training. Mentors are most effective when they are well-trained (New Teacher Center, 2007). As part of STAY, mentor and novice teachers will participate in an initial face-to-face training that provides an overview of the STAY program and reviews key concepts (i.e., expectations for the mentoring relationship, defining roles of the mentor/mentee, giving and receiving feedback, and building trust). To ensure mentors have the requisite skills to effectively mentor novice teachers at key points in the program, they will

participate in four additional trainings across the first two months. The topics are designed to build skills associated with effective mentors (Fleming et al., 2013) and are aligned with mentors' responsibilities. Topics include: Effective Communication Skills, Active Listening, Conducting a Needs Assessment, Goal Setting, Strategies to Help Mentees Meet Goals, Providing Constructive Feedback, Motivating Mentees, Building Mentees' Confidence, and Developing Independence in the Mentee.

To increase feasibility and sustainability, ongoing training for mentors will be delivered in an online format. Online learning modules are a popular method of disseminating information among teachers and effectively increase teachers' content knowledge (Jimenez et al., 2016; Upendra, 2015). For example, the Autism Focused Intervention Resources and Modules (AFIRM) has over 78,000 users in 173 countries (Morin et al., in press) and has resulted in statistically significant increases in teachers' knowledge of EBPs for students with ASD (Sam et al., 2020). Given the effectiveness of online modules and their popularity among teachers of students with ASD, I will develop online learning modules in Phase 1 (Years 1-2) in consultation with the developer of the AFIRM modules, Dr. Ann Sam, to deliver ongoing training to mentors. In addition to the ability to access modules at a time that is convenient for the mentor and eliminating travel to in-person trainings, online modules have the added benefit of being independent learning tools; thus, saving school districts money in training costs, an important consideration for high-minority schools where training costs are already high.

Component 3: Observation of Exemplary Teaching. Observing exemplary teaching of mentors and veteran teachers is a critical component of induction programs (Goldrick, 2016). Observing mentors provides opportunities for the mentor to model effective teaching practices (Billingsley et al., 2019), and observing model teachers provides a diversity of perspectives and new ideas (Hebert et al., 2018). As part of STAY, novice teachers will conduct eight classroom observations (i.e., one per month): four observations of their mentor teacher and four additional observations of exemplary teachers recommended by the district. During the development phase (Years 1-2), with feedback from stakeholders and advisory board members, I will develop resources to structure the observations and the subsequent debriefing sessions.

Component 4: Formative Assessment of Teaching Practice. In addition to observing exemplary teaching, it is also important for novice teachers to be observed by their mentor (Goldrick, 2016). Being observed regularly with formative assessment on their teaching provides a supportive environment for novice teachers to build their instructional and behavior management skills (Billingsley et al., 2019), resulting in a cascading effect on the predictors of attrition (see Theory of Change). As part of STAY, novice teachers will be observed twice per month – one in person observation and one video-based observation – for a total of 16 observations. Including video-based observations increases feasibility by eliminating travel time and the need to secure a substitute teacher for the mentor teacher, therefore also reducing costs. In addition, recording video of the novice teacher allows the mentor to review segments of the teaching episode to highlight strengths and areas for improvement, a practice that is highly effective for improving teachers' skills (Morin et al., 2019; Morin et al., in press).

Component 5: Participation in a Network. Participation in a network, defined as personal connections among participants with a shared experience or reason to connect (Macia & Garcia, 2016), provides numerous benefits to novice teachers and is an important component of induction programs (Billingsley et al., 2019). Networks develop a sense of community among participants and provide novice teachers with a platform for accessing resources, advice, and new ideas (Marcia & Garcia, 2016). The support that novice teachers receive from networks is

distinct from the support received by mentors in that participants all share a common experience – that of being new to the field. This shared experience results in a sense of belonging, reduces isolation, and provides emotional support in a way that can only be achieved with others who share the same experience (Lantz-Anderson, 2018).

Networks can occur in a face-to-face or online format, both of which have demonstrated effectiveness (Marcia & Garcia, 2016); however, online networks have become more popular in recent years due to the ubiquitous nature of technology (Lantz-Anderson, 2018). A variety of online platforms have been successfully used to develop networks, including social media (e.g., Twitter, Facebook), email, blogs, learning management systems (e.g., Moodle), and web-based platforms (Marcia & Garcia, 2000). Given the small number of novice teachers of students with ASD typically employed in a given school, STAY will use an online format to develop external networks with other novice teachers of students with ASD. To increase acceptability, the platform will be determined during Phase 1 based on stakeholder feedback.

Theory of Change

High-quality induction programs have resulted in improved outcomes for both teachers and students (Carver-Thomas & Darling-Hammond, 2017); although the exact mechanisms of change are less certain, especially among special education teachers (Billingsley & Bettini, 2019). We do know that the strongest direct influence on intent to stay in teaching, a commonly used proxy for attrition (Ingersoll & Strong, 2011), is job satisfaction (Cross & Billingsley, 1994), and teacher self-efficacy has a direct effect on job satisfaction (Viel-Ruma et al., 2010). Self-efficacy, or the belief in one's ability to affect change, is related to several factors, including burnout (Park & Shin, 2020) and teaching effectiveness (Klassen, 2014). Specifically, teachers who have higher evaluations of teaching performance and belief in their ability to teach children with ASD and manage their behavior have lower levels of burnout (Klassen, 2014; Park & Shin, 2020; Ruble et al., 2011). Thus, induction programs that target the instructional and classroom management skills of teachers, and specifically focus on EBPs for students with ASD, are likely to decrease burnout and have a resulting positive impact on job satisfaction and intent to stay in teaching. Other factors that affect burnout are perceived role conflict and ambiguity (Schwab & Iwanicki, 1982), both of which are commonly experienced by novice special education teachers (Billingsley et al., 2019). As such, specially designed induction programs that support novice teachers in clearly defining their roles and effectively carrying out the responsibilities of their role are likely to reduce burnout and positively affect job satisfaction and intent to stay in teaching. See Appendix F1: Theory of Change for a visual representation of these factors.

Research Project Aims

Research has elucidated the active ingredients in effective induction programs. Best practices include mentor support, initial and ongoing training, observation of exemplary teaching, formative assessment of teaching practice, and participation in a network. Moreover, these practices are most effective when combined into one comprehensive program (Ingersoll & Strong, 2004); however, more comprehensive programs also have lower participation and higher levels of job tension among participating teachers, likely due to the intense time demands (Helms-Lorenz & Maulana, 2015). Additionally, most research that supports the effectiveness of induction programs has been conducted with general education teachers, with far less known about the effects on special educators (Billingsley & Bettini, 2019), such as teachers of students with ASD. Further, high-minority schools face additional challenges that may impede the successful implementation of generically designed induction programs. Given these factors, ***this project aims to develop a specially designed induction program based on best practices for use***

by novice teachers of students with ASD working in high-minority schools that is feasible and acceptable to users. Through an iterative process, with extensive feedback from stakeholders, I will (a) identify what adaptations are needed to the STAY components to increase their feasibility and acceptability, (b) develop the STAY induction program manual and resources, (c) revise STAY based on stakeholder feedback, and (d) collect pilot data on the effectiveness of STAY that will be used to inform the development of a subsequent IES Initial Efficacy study.

Career Development Aims

In addition to the research aims, this project also aims to ***refine my skills in research and develop the competencies needed to launch a long and productive career conducting high-impact research.*** My prior research has provided me with valuable insight that will support the successful completion of this project. Specifically, I have led six investigations on (a) the knowledge and experiences of educators when working with students with ASD (Morin et al., in press; Morin et al., in review), (b) the effects of video-based professional development on special educators' instructional practices and student outcomes (Morin et al., in press; Morin et al., 2019; Morin et al., 20202), and (c) the identification of EBPs for students with ASD (Morin et al., 2018). Additionally, I co-authored the National Clearinghouse on Autism Evidence and Practice's (NCAEP) technical report on EBPs for students with ASD (Steinbrenner et al., 2020). Through this research, I learned which practices are effective for improving (a) special educators' instructional skills and (b) outcomes for students with ASD. Although valuable, I require additional knowledge and skills to meet my future research goals.

Future Research. My long-term research agenda broadly aims to improve outcomes for students with ASD by equipping their teachers with the skills necessary to implement EBPs. To accomplish this agenda, it is imperative that I develop skills in **(a) school-based research, (b) mixed methods and group design research, and (c) grant writing and publication**. Although I have some experience with each of these, I need additional knowledge and skills to become proficient. For instance, during my IES postdoctoral fellowship I gained experience conducting school-based research as an instructional coach for an IES Initial Efficacy project, *An Efficacy Study of the School-Based National Professional Development Center on ASD Model* (TESELA; Odom et al., 2015-2019), and as a research team member for an IES Development and Innovation project, *Supporting Paraprofessionals' Use of Evidence-Based Practices for Students with ASD* (STELAR; Odom, 2017-2020); however, I have not yet conducted research in a school setting independently. Through this project, ***I aim to develop the skills needed to independently lead research projects in school settings***. Specifically, I plan to acquire skills related to developing interventions that consider teacher time constraints, instructing teachers with a variety of skill levels, and accommodating teachers' values and preferences.

In addition to school-based research, I need methodological skills in mixed methods and group design research to accomplish my research agenda. The majority of my prior research was conducted using meta-analysis or systematic review (n = 10 publications) and single-case design (n = 4 publications). I gained some practical experience with group design and mixed methods research through my involvement with TESELA and STELAR during my postdoc; however, I was only involved with parts of these projects, and I have not yet independently led projects using these methodologies. I also gained didactic experience with qualitative and group design research through attending (a) the 2018 IES Cluster Randomized Trials Summer Training Institute, (b) the 2018 Odum Institute Qualitative Research Summer Intensive, (c) a course on multilevel modeling, but I need practical experience with these concepts through direct application in a research project with ongoing mentoring. As a result of this project, ***I aim to***

develop methodological skills in mixed methods and group design research in order to independently lead research projects using these methodologies.

Finally, I need additional skills in grant writing and publication to facilitate my independence as a researcher. Although I have assisted my doctoral advisor and postdoctoral supervisors with the development of external grant proposals and successfully written a Lehigh University internal proposal, I have not yet developed a successful external grant proposal to support my research. Additionally, I have substantial experience disseminating the results of my research in peer-reviewed outlets (n=18), but I still have room for growth. For example, the chair or co-chair of my dissertation committee were co-authors on 13 of my publications and relatively few of them were published in highly visible, top-tier outlets (e.g., *Exceptional Children, Autism Research*). To accomplish my goal of launching a long and productive career conducting high-impact research, I need strong skills in writing competitive grant proposals and publishing in preeminent journals; therefore, ***I aim to establish an independent publication record in top-tier journals and develop my skills in grant writing***.

RESEARCH PLAN

In collaboration with identified mentors and consultants, I will use an iterative approach to develop an induction program for use by novice teachers of students with ASD working in high-minority schools. The approach follows the *Iterative Process of Intervention Development,* described by my primary mentor in Kern et al. (2011) and used in five IES Development and Innovation grants by my primary mentor (ATTAIN, Kern & Wehby, 2016-2019; Project PEAK, DuPaul & Kern, 2012-2015; SCCR, Kern et al., 2020-2023) and consultant (CSESA, Odom, 2012-2017; STELA, Odom et al., 2017-2020). As part of this iterative approach, I will progressively design, test, refine, and retest the induction program across three phases. At the conclusion of the project, I will have a ***fully-developed, research-supported induction program*** for use by novice teachers of students with ASD working in high-minority schools that I plan to further test on a larger-scale in a future IES Initial Efficacy study.

Timeline

In Phase 1 (Years 1-2), *Initial Development*, I will develop STAY using a mixed methods approach (i.e., focus groups, classroom observations, and advisory board) to gather stakeholder feedback on the components of STAY and the feasibility of implementing them in high-minority schools. During Phase 2 (Year 3), *Iterative Program Development,* I will implement STAY using a mixed methods design (i.e., interviews and pre-post data), obtain extensive feedback during and after implementation, and refine and improve the program based on the feedback. In the final phase (Year 4), *Pilot Efficacy Study,* I will use a RCT to evaluate the effectiveness of STAY. See Appendix F2 for a detailed timeline delineating project activities.

Setting

The setting for this project is elementary-level, special education classrooms in high-minority schools in Pennsylvania and surrounding areas (e.g., New Jersey and New York). I chose to focus on elementary-level classrooms because research indicates that induction programs differentially affect outcomes for teachers in elementary versus high school settings, suggesting that the components of an induction program need to be individualized for teachers working in these settings (Kapadia et al., 2007). High-minority schools were selected because novice teachers in these settings are more likely to leave the field and experience negative outcomes than teachers in low-minority schools (Carver-Thomas & Darling-Hammond, 2017).

PHASE 1: INITIAL DEVELOPMENT (YEARS 1-2)

Goals and Research Questions

The purpose of Phase 1 (Years 1-2) is to develop the initial STAY induction program that will be tested in subsequent phases of the project. Additional purposes of Phase 1 are to identify and address systemic or other contextual barriers that may impede implementation, feasibility, and acceptability of STAY. The following research questions will be asked during Phase 1:

1. In which areas (e.g., behavior management, instructional practices, data collection, etc.) do novice teachers of children with ASD generally need the most support?
2. What induction and mentoring opportunities are currently available to novice teachers of students with ASD in high minority schools?
    a. How frequently are these opportunities offered?
    b. How do stakeholders (i.e., novice and experienced teachers of ASD, school/district administrators, district specialists) perceive the effectiveness of these opportunities?
3. From stakeholders' perspectives:
    a. What features are important to include in an induction program for novice teachers of students with ASD?
    b. How can the components of STAY be adapted for implementation in high-minority settings to increase their feasibility and acceptability?

Design. Phase 1 will use a mixed methods approach (i.e., focus groups, classroom observations, advisory board) to inform the development of the induction program.

Participants. I will observe a minimum of 10 novice teachers' classrooms, receive feedback from an advisory board consisting of six researchers and practitioners (see Appendix E3-E7), and conduct one round of focus groups with 6-8 participants from each of the following four stakeholder groups: (1) novice teachers (i.e., within their first three years of teaching) of students with ASD, (2) experienced teachers (i.e., more than five years of experience) of students with ASD, (3) school and district level administrators (i.e., principals, assistant principals, special education administrators), and (4) district-level specialists (i.e., coaches, technical assistance providers). This participant pool will provide a diversity of perspectives on (a) the feasibility of implementing STAY in a high-minority school and (b) what modifications are needed to increase acceptability. The inclusion criteria for teachers include being the lead teacher in a special education classroom with at least one student having an educational classification or medical diagnosis of ASD. The inclusion criteria for all participants include working in a high-minority school or district, defined as being in the highest minority quartile (USDOE, 2012).

Measures. Measures for Phase 1 will include focus group and classroom observation protocols (see Appendices F3-F4 for samples). Please note that the protocols may be revised based on feedback from my mixed methods mentor, Dr. Melinda Leko.

Procedures

Step 1: Update Literature Review. In preparing the current proposal, I have conducted an extensive review of the literature; however, in order to ensure the latest research and recommendations are incorporated into STAY, I will conduct an updated search of the literature to identify any new developments and findings in the field. Specifically, I will focus the search on the areas that novice teachers need the most support (RQ1) and best practices in induction support for novice teachers in high minority schools (RQ3).

Step 2: Conduct Observations in Classrooms. To determine in which areas novice teachers of students with ASD need support (RQ2), I will conduct classroom observations. The purpose of these observations is to determine teachers' current skill level in (a) behavior

management, (b) effective classroom practices (c) EBPs for students with ASD, (d) data collection, and (e) classroom environment. See Appendix F3 for a sample protocol. The data from these observations will inform the development of (a) the initial and ongoing trainings for mentors and (b) resources for novice teachers.

Step 3: Conduct Focus Groups. I will conduct focus groups with four different stakeholder groups (see Participants section) to determine (a) in which areas novice teachers of students with ASD need support (RQ1), (b) what induction and mentoring opportunities are currently available to novice teachers (RQ2), and (c) how STAY components can be revised to increase feasibility and acceptability (RQ3). Each focus group will be composed of 6-8 stakeholders and will last approximately 90-120 minutes. See Appendix F4 for a sample protocol. The information from these focus groups will inform the development of STAY.

Step 4: Analyze Data. In collaboration with Dr. Leko, I will analyze the data from the literature review, classroom observations, and focus groups to inform the development of an initial version of STAY. Specifically, I will focus on areas of consensus across data sources on (a) in which areas novice teachers of students with ASD need the most support (RQ1), (b) what induction components are currently in place and which ones can be added or improved (RQ2), and (c) how STAY components can be revised to increase their feasibility and acceptability in high-minority schools (RQ3).

Step 5: Develop STAY Manual and Resources. Based on information learned in Steps 1-4, I will develop a STAY manual that details information on (a) criteria for selecting mentors, (b) the format and number of mentoring sessions per month, (c) the content, timing, and format of initial and ongoing trainings, (d) the format and number of classroom observations for the mentor and novice teachers, and (e) the expectations around the network (e.g., format, content number of contributions, criteria for participation, etc.). In addition, I will develop resources for use by STAY participants, including (a) fully developed initial and ongoing trainings, (b) data collection forms for classroom observations, (c) mentoring logs, (d) fidelity of implementation checklists for mentoring and feedback sessions, and (e) a STAY Implementation Index to assess program adherence (see Appendix F5 and Key Measures section). Finally, I will develop a project webpage on the Center for Promoting Research to Practice website at Lehigh University (see Appendix A: Dissemination Plan) to house a digital copy of the manual and resources for easy retrieval by participants. Additional resources may be added based on stakeholder input.

Step 7: Feedback from Advisory Board. To determine needed revisions to the STAY manual and resources, I will gather feedback from an advisory board consisting of **Drs. Bonnie Billingsley, Samuel Odom, Melinda Leko**, and school and district leaders (see Personnel section and Appendices F3-F7). Prior to the remote advisory session, I will send the STAY manual and resources to the advisory board members for review. After review, the advisory team will meet in a 2-hour remote session to provide feedback on (a) the most important and feasible features of STAY and (b) needed revisions or additions.

Step 8: Revise STAY Manual and Resources. Based on information learned from the advisory board, I will make needed revisions to the STAY manual and resources.

Data analysis

The following data analysis plan was developed in collaboration with my mixed methods mentor, Dr. Melinda Leko. For Phase 1, I will analyze collected data (i.e., focus groups, classroom observations, and advisory board feedback) using convergent mixed-methods analyses (Creswell et al., 2011). In this analysis approach, the qualitative and quantitative data are collected concurrently, analyzed separately, and then merged to provide a more wholistic

understanding of the research questions (Klingner & Boardman, 2011). For the qualitative data sources, I will use an inductive approach that employs modified grounded theory coding techniques (Charmaz, 2006; Strauss & Corbin, 1998) and begin by assigning categorical (open) codes that are relevant to the induction program content and delivery. Then I will advance from categorical analysis to axial coding to identify relationships between open codes and data (LeCompte & Schensul, 1999). Once I identify axial codes, I will follow analysis techniques to reassemble the data by making connections between categories and subcategories (Strauss & Corbin, 1998). The results will be a hierarchical schema that describes and explains major themes and their interrelationships. The major qualitative themes and hierarchical schema will be merged with the quantitative scores on the observation instrument to indicate the degree to which the induction program addresses teachers' professional development needs and is perceived as feasible for implementation in high-minority schools. To promote credibility and trustworthiness, I will triangulate within and across participant cases and data sources (Brantlinger et al., 2005), engage in peer debriefing with Dr. Leko, maintain an audit trail, and pay explicit attention to researcher positionality and reflexivity (Trainor & Graue, 2014).

Expected Outcomes of Phase 1

At the conclusion of Phase 1, I will have a fully developed STAY manual and set of resources based on multiple sources of stakeholder feedback that will be tested and further revised in Phase 2. I will also have a website to house a digital copy of the manual and resources to facilitate easy access. Finally, to assure successful pilot testing, I will have identified potential barriers that can be addressed with school staff prior to implementation of the program.

PHASE 2: ITERATIVE PROGRAM DEVELOPMENT (YEAR 3)

Goals and Research Questions

The purpose of Phase 2 is to implement the STAY induction program in high minority schools and use the developed resources in context with novice teachers and mentors for evaluation and further refinement. Specific research questions for Phase 2 include:

1. Do preliminary data suggest STAY will result in improved outcomes for students with ASD and their teachers?
2. What improvements and refinements can be made to increase the feasibility and acceptability of STAY?
3. What training and coaching is required for implementation of STAY with fidelity?
4. Do the developed manual and resources permit relatively independent implementation of STAY and are they easy to understand and use?

Design. Phase 2 will use a mixed methods approach to collect interview and outcome data using a pre-post design to evaluate and further refine the STAY induction program.

Measures. To answer RQ1, Phase 2 will involve the collection of both teacher and student outcome data (see Key Measures section for more information). Teacher measures include the Maslach Burnout Inventory – Teacher Survey (MBI-ES; Maslach et al., 2016), Autism Self-Efficacy Scale for Teachers (ASSET; Ruble et al., 2013), Role Questionnaire (Rizzo et al., 1970), Brayfield-Rothe Job Satisfaction Index (Brayfield & Rothe, 1951), Classroom Assessment Scoring System (CLASS; Pianta et al., 2008), and Intent to Stay (Cross & Billingsley, 1994; National Center for Education Statistics, 2012). Teacher measures will be administered pre- and post-intervention.

Student measures include the Direct Behavior Rating (DBR; Christ et al., 2009) and the Goal Attainment Scale (GAS; Kiresuk & Sherman, 1968). For the DBR, teachers will identify

one 15-min class session when academic engagement is typically low (i.e., below 50%). Prior to data collection, I will observe the class periods of all participating teachers to confirm that academic engagement is low during the identified 15-min session. Teachers will complete one DBR measure on the target student per day during the pre-selected time period for 10 consecutive days. The 10 measures will be averaged to obtain one academic engagement score prior to intervention and one score after intervention. Ten measures were chosen as prior research indicates that 10 DRB ratings are needed to yield reliable estimates of student behavior (Christ et al., 2009). For the GAS, I will work with each teacher prior to intervention to identify one unmet academic goal per target student and assist the teacher with scaling the goal (see Appendix F6). After intervention, research staff will observe the target student to determine progress towards the goal.

In addition to teacher and student measures, I will also collect data on program measures and conduct interviews to (a) assess feasibility and acceptability and (b) inform the revision of STAY. At three time points (i.e., November, February, May), I will use the STAY implementation index (see Appendix F5 and Key Measures section) to assess fidelity of implementation of STAY. I will administer the Mentor Competency Assessment (MCA; Fleming et al., 2013) to both mentors and novice teachers at the same three time points to gather data on the effectiveness of the mentor arrangement. Additionally, post-intervention, novice teachers will complete the Usage Rating Profile-Intervention Revised (URP-IR; Chafouleas et al., 2011). Finally, I will conduct interviews with mentors and novice teachers after each administration of the STAY Implementation Index, MCA, and URP-IR to gather additional insight into (a) the improvements and refinements that are needed to increase the feasibility and acceptability of STAY (RQ2), (b) what additional training and coaching is required for implementation of STAY with fidelity (RQ3), and (c) whether the developed manual and resources permit relatively independent implementation of STAY and are they easy to understand (RQ4). See Appendix F7 for a sample interview protocol.

Participants. Participants for Phase 2 include five mentor/teacher/student triads. Inclusion criteria for mentors include having at least five years of experience teaching students with ASD in a high minority school. Additionally, mentors must be recommended by district or school-level administrators for having excellent (a) teaching evaluations over the previous three years and (b) communication and interpersonal skills. Inclusion criteria for novice teachers include (a) being in their third year or less of teaching; (b) teaching full-time in a special education classroom; (c) having at least one student with ASD in their classroom; (d) teaching in a high-minority school, defined as being in the highest minority quartile (U.S. Department of Education, 2012); and (e) a willingness to participate in the study. Additionally, novice teachers must be recommended by district or school-level administrators as in need of induction support as evidenced by low teaching evaluations the previous year.

Inclusion criteria for students include having (a) an educational classification or medical diagnosis of ASD, (b) low levels of academic engagement, and (c) at least one unmet academic goal. A graduate assistant or I will confirm students' educational classification or medical diagnosis of autism through a review of the students' records. Additionally, we will confirm low levels of academic engagement and unmet academic goals through direct observation. For academic engagement, students must demonstrate an average of 50% engagement or less, as measured by the DBR, across a minimum of three 15-minute observation periods to be included in the study. For unmet academic goals, I will work with the teacher to create a GAS goal for the

student and a graduate research assistant or I will observe the student to confirm that they are performing at a Level 0 (see description of GAS in Key Measures section).

Procedures

Step 1: Recruit Teachers and Mentors and Obtain Informed Consent. Prior to recruitment, I will meet with my primary mentor, Dr. Kern, to develop recruitment materials and a recruitment plan. Once the materials and plan are finalized, I will ask administrators (e.g., principals, special education directors) in high-minority school districts to nominate teachers and mentors that meet the inclusion criteria described in the participant section. Once five potential teachers and mentors have been identified, I will contact them to explain the study and obtain consent. After all teachers have been identified, I will ask teachers to nominate one student in their class who meets the criteria outlined in the participant section to participate. If I am unable to obtain consent from at least one student in the classroom, then that teacher will be excluded from the study and I will identify another teacher to replace the one who was excluded.

Step 2: Complete Pre-Intervention Measures. After all participants have been identified and consented, I will administer the demographic questionnaire, novice teacher measures (i.e., MBI-ES, ASSET, Role Questionnaire, Brayfield-Rothe Job Satisfaction Index, CLASS, Intent to Stay) and student measures (i.e., DBR, GAS). See Key Measures section below for additional information on each measure.

Step 3: Conduct Initial Training for Teachers and Mentors. After all pre-intervention measures have been completed, I will deliver introductory trainings (developed in Phase 1) to novice teachers and mentors. The trainings will be delivered separately and include the following topics: overview of STAY, expectations for the mentoring relationship, defining roles of the mentor/mentee, giving and receiving feedback, and building trust. The training for novice teachers will also include community building activities to help establish a trusting, collegial relationship, factors that enhance the success of networks (Component 5 of STAY).

Step 4: Implement STAY Induction Program. After teachers and mentors have completed the initial training, they will begin implementing STAY as defined in the program manual developed in Phase 1. Research assistants (RAs) will collect data on all components of STAY to document fidelity. For Component 1: Mentor Support, RAs will observe all mentoring sessions and collect fidelity data on the mentor's behavior (see Appendix F8 for a sample mentor session fidelity checklist). For Component 2: Initial and Ongoing Training, RAs will take attendance at the initial training and monitor successful completion (90% or higher) of the online learning modules. For Components 3 and 4: Observation of Exemplary Teaching and Formative Assessment of Teaching Practice, RAs will attend the classroom observations and debriefing sessions and take data using a debriefing fidelity checklist (e.g., notes things that went well and asks questions or seeks clarification on topics of confusion or dissonance; to be developed in Phase 1). For Component 5: Participation in a Network, RAs will moderate the online network communities and collect data on the number of times novice teachers contribute each week. Each of these components are delineated in Appendix F5: Sample STAY Implementation Index and will be used to calculate an overall STAY implementation fidelity score (see Key Measures).

Step 5: Evaluate Implementation of STAY Induction Program and Obtain Stakeholder Feedback. I will monitor implementation STAY by using the data collected by RAs to calculate a STAY Implementation Index fidelity score at three points during the year (November, February, May). Feedback will be provided to the school staff on percentage integrity immediately following completion of the measure. If data indicate that implementation was less than 90% at any time point, I will determine which features of STAY were not satisfactory, and I

will interview teachers and mentors to try to determine why implementation fidelity was low in these areas. I will analyze the interview data with mentorship from Dr. Leko and review the results with Dr. Kern to determine what supports (e.g., trainings, resources) need to be developed to help novice teachers and mentors reach fidelity. I will create these supports and implement them prior to the next fidelity check.

In addition to the STAY Implementation Index, I will administer the Mentoring Competency Assessment (MCA; Fleming et al., 2013) to both teachers and mentors at the same three time points (November, February, May). If the data from the assessment indicate that the mentor is not competent in any of the six areas assessed (i.e., maintaining effective communication, aligning expectations, assessing understanding, fostering independence, addressing diversity, and promoting professional development), then I will conduct follow-up interviews to gain additional information about the mentor's perceived incompetence in the area(s) indicated on the assessment. Additionally, I will probe the teachers and mentors to determine what additional supports (e.g., trainings, resources) need to be created to develop the mentor's competence. I will analyze the interview data with mentorship from Dr. Leko and meet with Dr. Kern to discuss the findings and develop a plan to remediate the problematic areas.

Lastly, I will administer the Usage Rating Profile-Intervention Revised (URP-IR; Chafouleas et al., 2011) to both mentors and teachers at the conclusion of intervention to assess the STAY induction program's feasibility and acceptability. As with the STAY Implementation Index and the MCA, I will conduct follow-up interviews to gain additional information about areas that were rated poorly and I will analyze the interview data with mentorship from Dr. Leko and meet with Dr. Kern to discuss the findings and identify what revisions are needed to the program to increase its feasibility and acceptability.

Step 6: Evaluate Effect of the STAY Induction Program on Teacher and Student Outcomes. To evaluate the effect of the STAY induction program, I will administer all teacher and student outcome measures as described in the measures section and Step 2.

Step 7: Data Analysis. I will consult with my mentor, Dr. Leko, to analyze the results of the interview data throughout Phase 2 in order to make changes as they are needed. For analysis of teacher and student outcomes, I will analyze these data with mentorship from Dr. Spybrook.

Step 8: Refine STAY Induction Program. I will meet with Dr. Kern throughout Phase 2 to refine the STAY induction program. In addition, I will use the results of the outcome measures to determine if additional changes are needed at the conclusion of intervention. If the data indicate refinements are still needed, I will meet with Dr. Kern to discuss what changes can be made to maximize the effectiveness of STAY.

Data Analysis

To answer RQ1 regarding the effects of STAY on teacher and student outcomes, I will analyze pre- and post-intervention scores on standardized measures using the non-parametric Wilcoxon signed ranked test to account for the small sample size. For the program measures (i.e., STAY Implementation Index, MCA, URP-IR), I will use a sequential quantitative-qualitative approach (Collins et al., 2006). For each of the three data collection timepoints (i.e., November, February, and May) I will first analyze the quantitative STAY Implementation Index and MCA data descriptively and use the results to inform the follow-up qualitative semi-structured interviews. This will allow me to develop interview protocols that provide direct follow up data based on teacher and mentor scores on the STAY Implementation Index and MCA; thus, answering questions about what improvements or refinements are needed (RQ2), what training or coaching is required for implementation with fidelity (RQ3), and whether the

developed manual and resources permit relatively independent implementation of STAY and whether they are easy to understand and use (RQ4). For example, if teachers and/or mentors score low on particular items on the STAY Implementation Index and MCA, I will use the qualitative interviews to probe for deeper understanding about why and how to best address the low scores. I will use a similar data approach for the analysis of the URP-IR and subsequent semi-structured interviews following the conclusion of the intervention. Like Phase 1, I will use an inductive approach that employs modified grounded theory coding techniques (Charmaz, 2006; Strauss & Corbin, 1998) to analyze the qualitative interview data. I will also use similar methods to ensure trustworthiness and credibility of the data (see Phase 1 data analysis section).

Expected Outcomes of Phase 2

At the conclusion of Phase 2, I expect to have a fully-developed induction program that has been refined based on data, feedback, and my implementation experience. The STAY induction program components will be supported with descriptive and quasi-experimental evidence. Further, I anticipate a complete set of resources and a STAY induction manual that contains clear, practitioner friendly and easy to use steps for implementation.

PHASE 3: PILOT EFFICACY STUDY (YEAR 4)

Goals and Research Questions

The purpose of Phase 3 is to collect pilot data on the efficacy of STAY in preparation for a larger efficacy trial. I will conduct a randomized control trial (RCT) to compare the STAY condition to a services as usual condition (SAU; i.e., whatever typical induction is provided by the district). The following research questions will be asked:

1. What are the effects of STAY on novice teachers' (a) level of burnout, (b) self-efficacy, (c) job satisfaction, (d) teaching effectiveness, (e) role conflict and ambiguity, and (f) intention to stay in their current position?
2. What are the effects of STAY on students' (a) academic engagement and (b) goal attainment?
3. Are teachers and mentors of students with ASD in high-minority schools able to implement STAY with high fidelity (i.e., 90% or higher)?
4. Do novice teachers of students with ASD and their mentors in high-minority schools find STAY feasible and acceptable?
5. What are the costs associated with implementing STAY?

Research Design

Phase 3 will use a randomized control trial (RCT) to evaluate the effects of STAY. Novice teachers will be randomized to either the STAY condition (n=11) or the SAU condition (n=11). For teacher outcomes, the study will be a simple one-level RCT. For the student outcomes, students are nested within teachers and random assignment occurs at the teacher level, hence the design is a 2-level cluster randomized trial (CRT). Teachers will be assigned to mentors at a 1:1 ratio thus there is no clustering at this level.

Power Analysis

The power analysis was conducted in collaboration with my statistical mentor, Dr. Spybrook, using Optimal Design software (Spybrook et al., 2009) and according to the guidelines for examining statistical power for CRT designs examining teacher and student outcomes (Zhang et al., 2020). The minimum detectable effect size (MDES) was determined using a primary measure for both teacher and student outcomes with available design parameter information. Design parameters were estimated using Odom and colleagues (in review) and Zan

& Donnegan-Ritter (2014). Although the proposed study may be underpowered to detect teacher and student level outcomes, it is still valuable as it will provide an estimate of the magnitude of the treatment effect which is important for planning future studies. Hence, ***one of the goals of the pilot study is to generate estimates of the magnitude of the treatment effect that would be used to design a future efficacy trial in a subsequent proposal***.

Teacher outcomes. Using the option for a simple randomized trial, the MDES assuming power = .80 is .94 for the CLASS measure. A similar study using the CLASS to measure the effects of a mentoring intervention on teaching effectiveness found effect sizes ranging from .5 to 1.9 across 10 dimensions of the CLASS (Zan & Donnegan-Ritter, 2014). The current analysis assumes a Type I error rate of .05, 10 teachers in each condition, and R^2=.50 using teacher pretest scores as a covariate. The same R^2 estimate was used in the power analysis for a similar IES efficacy trial (Odom et al., 2015-2019). Assuming an expected 10% attrition rate, 22 teachers will be recruited to achieve the 20 teachers needed to detect the proposed effect sizes.

Student outcomes. Using the option for a 2-level CRT, the MDES assuming power = .80 is .94 for the GAS measure. The current analysis assumes a Type I error rate of .05, 2 students per classroom, an intraclass correlation (ICC) of .35, and R^2= .50 using student pretest scores as a covariate. A similar study using the GAS to measure the effects of a professional development intervention for teachers on the goal attainment of students with ASD found an effect size of 0.71 and an ICC of .35 (Odom et al., in review). Assuming an expected 10% attrition rate, 44 students will be recruited to achieve the 40 students needed to detect the proposed effect sizes.

Participants

Based on the results of the power analysis, a total of 22 novice teachers, 22 mentors (1:1 ratio), and 44 students with ASD (i.e., two per classroom) will be recruited for this study. I anticipate 1-2 eligible teachers per school. To ensure feasibility, I have budgeted for four full-time graduate assistants to assist with implementation and data collection. Inclusion criteria from Phase 2 will be applied in Phase 3.

Measures and Administration

Phase 2 measures will be used in Phase 3 and the same administration schedule will be applied (see Phase 2 Measures section).

Procedures

I will follow the same recruitment strategy as described in Phase 2 (Step 1). Once all participants have been consented and pre-intervention measures have been administered, I will use a random number generator to randomly assign teachers to either the STAY condition or the SAU condition. Teachers in the SAU condition will receive whatever induction and mentoring support is typically provided by the district but will not participate in any of the STAY activities. I will use the STAY Implementation Index developed in Phase 1 to document any STAY program components that teachers in the SAU condition receive from their district. Teachers in the STAY condition will receive the final version of the STAY induction program and implementation will follow the procedures outlined in Phase 2, Step 4. Implementation fidelity will be monitored using the STAY Implementation index.

Cost analysis

I will develop the cost analysis plan (RQ5) in consultation with Dr. Samuel Odom after attending the IES Methods Training in Cost Effectiveness and Economic Evaluation (see Career Plan, Goal 3 and Personnel section). However, preliminarily, I plan to use district data to determine cost for mentor training, mentor time, substitute teacher time, and novice teacher time. The level of analysis will be at the district level.

Data analysis

To determine the efficacy of STAY on novice teacher outcomes (RQ1), scores on the MBI-ES, ASSET, Role Questionnaire, Brayfield-Rothe Job Satisfaction Index, CLASS, and Intent to Stay measure will be compared at the end of intervention using an ANCOVA, with baseline scores included as a covariate. To determine the distal effects on student outcomes (RQ2), student scores on the DBR and GAS will be analyzed using an ANCOVA that includes the teachers' baseline CLASS score and the students' DBR and GAS scores as covariates. This analysis will account for the nesting of students within teachers using cluster-adjusted standard errors, a preferred approach when the number of students per teacher is small (Esarey & Menger, 2017). Scores on the STAY Implementation Index and URP-IR will be analyzed descriptively to answer questions regarding novice teachers' and mentors' ability to implement STAY with high fidelity in high-minority schools (RQ3) and the feasibility and acceptability of STAY (RQ4). To answer RQ5, a cost analysis will be conducted as described above.

Expected Outcomes of Phase 3

Following the pilot study, I expect to have a fully developed, research supported induction program for use by novice teachers of students with ASD in high-minority schools. As part of the program, I expect to have (a) a complete STAY induction manual, (b) a set of training materials to support implementation, (c) assessments to evaluate fidelity of implementation, (d) resources for mentors and teachers (e.g., mentor logs, feedback forms, etc.), (e) an easy to navigate website to house the resources associated with the program, and (f) a suggested set of measures for teacher and student outcomes associated with the STAY program. In addition, I anticipate having evidence from the development phases and the experimental pilot study that will (a) support my theory of change, (b) indicate that users understand and can feasibly implement the STAY program with fidelity in high-minority schools, and (c) support the promise of improving outcomes among novice teachers and students with ASD. Finally, I anticipate using the data from this project ***to inform the development of an IES Initial Efficacy project*** to evaluate STAY on a larger scale.

KEY MEASURES

Demographic Information

All participants will complete a demographic form and provide information on (a) age, (b) gender, (c) race/ethnicity, (d) years of experience, (e) previous experience with mentoring and induction, (f) certification type and level, and (g) education level. District-level specialists (i.e., coaches or technical assistance providers) will provide additional information on the (a) number of teachers or other school personnel to whom they provide professional development and (b) frequency with which they provide professional development and the content of this training. Parents will provide information on their child's language spoken in the home, socio-economic status, age of ASD diagnosis, concomitant diagnoses, and medical status.

Teacher Outcome Measures

Burnout. Teacher burnout will be measured using the Maslach Burnout Inventory - Educator Survey (MBI-ES; Maslach et al., 2016). The MBI-ES has been used extensively for over three decades to measure burnout among educators and includes three subscales: emotional exhaustion, depersonalization, and personal accomplishment. There are 22 self-report items that are measured on a 7-point Likert response scale ranging from *never* to *every day.* Reported reliabilities for the subscales of this measure using Cronbach's alpha ranged from .72 to .90.

Self-Efficacy. Teacher self-efficacy will be measured using the Autism Self-Efficacy Scale for Teachers (ASSET; Ruble et al., 2013). The ASSET is a 30-item self-report measure that asks teachers to rate, on a scale from 1 (*cannot do at all*) to 6 (*highly certain can do*), their perceived ability to perform a variety of tasks with a particular student with ASD in their classroom. Reported reliability using Cronbach's alpha is .96.

Role Conflict and Ambiguity. Teacher role conflict and ambiguity will be measured using the Role Questionnaire (Rizzo et al., 1970), a 14-item self-report measure that asks respondents to respond on a numerical rating scale ranging from 1 to 7, with "1" indicating the respondent perceives the statement as *definitely not true* of one's job and a score of "7" indicating that the statement is *extremely true* of one's job. Higher scores indicate higher levels of role conflict and ambiguity. Reported reliabilities using Cronbach's alpha were .85 for the Role Conflict subscale and .86 for the Role Ambiguity subscale.

Job Satisfaction. Teacher job satisfaction will be measured using the Brayfield-Rothe Job Satisfaction Index (JSI; Brayfield & Rothe, 1951). The JSI contains 18 items and asks users to rate how they feel about their job using a 5-point Likert-type response scale ranging from *strongly agree* to *strongly disagree.* The JSI has been used extensively for the last seven decades to measure job satisfaction in a variety of professions, including special education (see Stempien & Loeb, 2002; Viel-Ruma et al., 2010). Reported reliabilities of this measure were .87.

Teaching Effectiveness. Teaching effectiveness will be measured using the Classroom Assessment Scoring System (CLASS; Pianta et al., 2008). CLASS is an observational tool used to assess teacher-student interactions using a 7-point Likert scale, and it is divided into three broad domains (i.e., emotional support, classroom organization, and instructional support) and eleven dimensions (Hamre et al., 2009). Although originally developed for use in Pre-Kindergarten classrooms, it has since been expanded for use in classrooms from infancy through secondary grades (Hamre et al., 2009). For this study, the CLASS K-3 will be used in early elementary classrooms and the CLASS-4 to 6 will be used in upper elementary classrooms. The internal structure of CLASS has demonstrated validity and reported reliabilities using the Omega coefficient are acceptable at .84 for Emotional Support, .82 for Classroom Organization, and .88 for Instructional Support (Li et al., 2020). Additionally, the CLASS is a primary outcome measure in a similar IES Development and Innovation project co-led by my mentor, Dr. Leko, aimed at developing a professional development intervention for emergency certified special educators working in rural districts (see Appendix C: Summary Table of Research).

Intent to Stay. Intent to stay in teaching is often used as a proxy for attrition when measuring attrition is not feasible due to time or budgetary constraints (Billingsley & Bettini, 2019), and prior research has demonstrated that it is strongly correlated with teachers' actual behavior of staying or departing from the field (Gersten et al., 2001). In this study, intent to stay will be measured by asking teachers to respond to a single item: "Please select which of the following responses comes closest to describing how long you plan to remain in teaching" with response options: (a) as long as I am able, (b) until forced to retire due to age, (c) until a specific life event occurs (e.g., parenthood, marriage), (d) until a more desirable job opportunity comes along, (e) definitely plan to leave teaching as soon as I can, or (f) undecided at this time. This measure was adapted from the Schools and Staffing Survey (SASS; National Center for Education Statistics, 2012) and Cross and Billingsley (1994).

Student Outcome Measures

Academic Engagement. Changes in student academic engagement will be measured using the Direct Behavior Rating (DBR; Christ et al., 2009), a method of assessment that

combines the efficiency of rating scales with systematic direct observation. Data collection involves completing a brief rating of student academic engagement using an 11-point unipolar rating scale that extends from 0-10 with each point representing increments of 10% (Kilgus et al., 2019); anchors are fixed at 0% (never), 50% (sometimes), and 100% (always). Consistent with prior research, academic engagement will be defined as actively or passively participating in the classroom activity (e.g., writing, answering a question, talking about the lesson, listening to the teacher, engaging with instructional materials, etc.; Kilgus et al., 2019). The DBR is a preferred measure in this study because it (a) is feasible for teachers, (b) has demonstrated sensitivity to change after intervention, and (c) has been used with students with ASD in classroom-based research (see Chafouleas et al., 2010; Kilgus et al., 2016). Additionally, the DBR is highly correlated with systematic direct observation (i.e., momentary time sampling) when used to measure academic engagement and training required for teachers to use the measure is minimal (Kilgus et al., 2019).

Goal Achievement. Changes in student goal achievement will be measured using the Goal Attainment Scale (GAS; Kiresuk & Sherman, 1968). GAS has been used for more than three decades as a primary measure of outcomes in education (Shuster et al., 1984) and has acceptable psychometric properties (Ruble et al., 2012; Cardillo & Smith, 1994). Additionally, GAS has been used successfully in other IES funded projects to measure the outcomes of students with ASD (i.e., CSESA; The Efficacy Study for Elementary Learners with Autism Spectrum Disorders [TESELA]). In this study, I will follow the GAS methodology designed and used by Ruble and colleagues in their RCTs of the COMPASS CTM for children with ASD (Ruble et al., 2013; Ruble et al., 2012) and refined by Odom and colleagues in their RCTs of the CSESA and TESELA models for children with ASD (Odom, 2012-2017; Odom et al., 2015-2019). The GAS item format is arranged on a 0 to 4 continuum, with the score of 0 representing current functioning and 4 representing progress greater than expected (see Appendix F6). Research staff will confirm teachers' ratings through reliability observations of student performance described below (Ruble et al., 2012).

Program Measures

Feasibility and Acceptability. The feasibility and acceptability of the STAY induction program will be measured by administering the Usage Rating Profile-Intervention Revised (URP-IR; Chafouleas et al., 2011). The URP-IR contains 29 items and asks users to rate the acceptability and feasibility of a treatment on six subscales: acceptability, understanding, feasibility, family-school collaboration, system climate, and system support. Items are measured using a 6-point, Likert-type response scale, ranging from *strongly disagree* to *strongly agree.* The URP-IR provides information on potential facilitators and barriers to implementation at the individual, intervention, and environmental levels. Reported reliabilities for the subscales of this measure using Cronbach's alpha ranged from .72 to .95 (Briesch et al., 2013).

Treatment Fidelity. To assess treatment fidelity of STAY and to document use of the program features in the SAU condition, I will develop a STAY Implementation Index during Phase 1, Step 5. This index is similar to the one used in an IES Initial Efficacy project (TESELA; Odom et al., 2015-2019). At three points during the year (November, February, May), I will review data (e.g., mentor logs, observation forms, field notes, etc.) from teachers, mentors, and GAs to assign a rating (i.e., completed, partially completed, incomplete) on features that should have been implemented up to that point. At the end of the year, the percentage of "completed" item ratings will be calculated, which will become the STAY Implementation Index Score. As

noted, I will conduct a parallel assessment with teachers and mentors participating in the SAU condition. See Appendix F5 for a sample of the STAY Implementation Index.

Mentor Competency. To assess mentors' competence from perspectives of both the mentor and the novice teacher, I will administer the Mentoring Competency Assessment (Fleming et al., 2013). These data will be used to inform the revision of STAY (see Phase 2). The MCA is a 26-item measure that assesses mentors' skills across six competencies: maintaining effective communication, aligning expectations, assessing understanding, fostering independence, addressing diversity, and promoting professional development. Respondents are asked to rate the mentor's skills on a 7-item Likert scale ranging from *not skilled at all* to *extremely skilled.* When administered to mentors, respondents are asked to rate how skilled they feel they are in each of the areas. When administered to mentees, respondents are asked to rate how skilled they feel their mentor is in each of the areas. Overall reported reliabilities using Cronbach's alpha for both mentors and mentees were .91 and .95, respectively.

Reliability

Reliability data will be gathered on the teaching effectiveness measure (i.e., CLASS), both student outcome measures (i.e., DBR & GAS), and the treatment fidelity measure (i.e., STAY Implementation Index). For the CLASS measure, a second, independent observer (i.e., graduate assistant) who is blind to the conditions of the study will complete the CLASS measure on a minimum of 20% of all observations in classrooms across both conditions. Prior to collecting data, the graduate assistant will attend the CLASS training and achieve reliability for the CLASS measure that they will be using (i.e., CLASS-K-3 or CLASS-4 to 6). Inter-rater reliability will be calculated according to the guidelines outlined in the CLASS manual (Pianta et al., 2008). For the DBR, a trained graduate assistant blind to the conditions of the study will independently complete a DBR measure on 40% of all observations in classrooms across both conditions. Inter-rater reliability will be calculated by analyzing the degree to which the two ratings correlate with one another (Kilgus et al., 2019). For GAS, trained GAs will use a template created by Ruble et al. (2013) and refined by Odom et al. (2015-2019) to rate each GAS goal on a scale of 1-3 for measurability, difficulty, and equidistance (see Appendix F9). A minimum of 20% of GAS goals across both conditions will be independently evaluated by a second trained GA. For the STAY Implementation Index, a second, independent rater will independently complete the index on a minimum of 20% of all indices completed. For both the GAS and the STAY Implementation Index, inter-rater reliability will be calculated by dividing the number of agreements by the number of agreements plus disagreements, multiplied by 100 to obtain a percentage.

SEER PRINCIPLES

I will work with my primary mentor, Dr. Kern, to ensure this project addresses all of the SEER principles. Specifically, I will (a) pre-register the study prior to beginning project work, (b) use Lehigh Preserve, an open-access, digital repository to publicly store all project data, methods, and results, (c) identify the intervention's core components through the development process, (d) document implementation of the STAY intervention and use of STAY program components in the contrast condition through the STAY Treatment Implementation Index, (e) conduct a cost analysis to analyze STAY's costs, (f) focus on outcomes that are meaningful to stakeholders, including school district leaders (i.e., intent to stay, teaching effectiveness), teachers (i.e., burnout, self-efficacy, job satisfaction, role conflict and ambiguity), and parents (i.e., academic engagement, goal attainment), (g) plan to facilitate generalization of the study findings in future efficacy trials by collecting detailed information on participants in the pilot

study and assessing how well the sample represents the target population, and (h) support scaling of promising results by submitting an Initial Efficacy proposal at the conclusion of this project.

CAREER PLAN

I have strategically developed a career development plan that will directly support my research plan and target my three career goals (i.e., increase capacity to conduct school-based research, develop expertise in mixed methods and group design research, and enhance skills in grant writing and research). ***The timing of the career development activities have been thoughtfully planned to develop my research skills immediately preceding the research activities that require these skills*** (see Appendix F2: Timeline). Prior to engaging in any project activities and for every year of the project thereafter, I will meet with all three of my mentors in a joint meeting to discuss my career goals and research plan and solicit feedback. These meetings will occur via distance technology (e.g., Zoom) at the start of Year 1 and during the Spring for every subsequent year of the project. Based on the guidance and feedback received from my mentors during these meetings, my research and career development plan may evolve.

MENTORING AND CONSULTATIVE ACTIVITIES

Formal Mentors. One internal mentor—**Dr. Lee Kern** at Lehigh University—and two external mentors—**Dr. Melinda Leko** at the University of Wisconsin and **Dr. Jessaca Spybrook** at Western Michigan University—have agreed to provide mentoring for this project (see Appendix D: Letters of Agreement). Dr. Kern will serve as my primary mentor and will provide mentoring for the duration of the project; Drs. Leko and Spybrook will provide mentoring during Years 1-4 and Years 3-4, respectively. I selected these mentors strategically because their respective areas of expertise complement one another and support different areas of my career plan. Dr. Kern has extensive experience developing and implementing IES Development and Innovation projects within school districts (Career Goal 1) and has an impressive track record of securing external funding and disseminating findings from her research (Career Goal 3). As such, Dr. Kern will be a valuable mentor throughout the duration of the project. Dr. Leko is experienced in designing and analyzing data from mixed methods research (Career Goal 2) and will assist with the development of protocols for the focus groups, classroom observations, and interviews during Years 1-3. Additionally, Dr. Leko will provide mentoring on the analysis of these data and will assist with the preparation of manuscripts focused on disseminating findings from the mixed methods aspects of the project throughout all four years. Finally, given Dr. Leko's experience with teacher development and induction (see Personnel section), she will also participate in an advisory board during Year 2 to provide feedback on the STAY induction manual and resources. Dr. Spybrook's expertise focuses on the design and analysis of data from cluster randomized control trials (Career Goal 2) and she will assist with the data analysis in Year 3 and the following aspects of the pilot study in Year 4: (a) refining the design and data analysis plan, (b) mentoring on data analysis, (c) assisting with the preparation of the method and results sections of manuscripts associated with the pilot study, and (d) assisting with the design of a larger scale RCT in a subsequent IES Initial Efficacy proposal to further test STAY.

Consultants. Two consultants—**Drs. Samuel Odom** and **Ann Sam** at the Frank Porter Graham Child Development Institute at UNC-Chapel Hill—have agreed to provide consultation on specific aspects of the project aligned with their expertise. Dr. Odom will provide consultative support on the cost analysis plan for the pilot study in Year 4. Dr. Odom developed a cost ingredients plan that he used to analyze cost in multiple funded projects (see Appendix E8: Letters of Support), and he will use this experience to support me in developing a cost analysis

plan for STAY. Additionally, given Dr. Odom's extensive experience with designing professional development programs for teachers of students with ASD, he will serve on the advisory board in Year 2 to provide feedback on the developed STAY induction program manual and resources. Dr. Sam will provide consultative support for the development and revision of online training modules for mentor teachers during Years 2-3. Dr. Sam served as Co-Principal Investigator for a funded IES Development and Innovation project, *Project STELA* (Odom etl al., 2017-2020), where she led the development and revision of online modules designed to increase paraprofessionals' abilities to deliver evidence-based practices for students with ASD. In addition, she has authored or supervised the development of 27 online modules aimed at improving the instructional skills of teachers of students with ASD.

CAREER DEVELOPMENT GOALS AND TRAINING ACTIVITIES

Goal 1: Increase Capacity to Conduct School-Based Research

Training activities. To achieve my goal of increasing my capacity to conduct school-based research, I will attend the Lehigh University School Study Council Meetings (see Resources section) to network with educational leaders, gain insight into their priorities, and solicit support for my research. Additionally, I will develop all recruitment and project materials collaboratively with my primary mentor, Dr. Kern, who has extensive experience conducting school-based research, including in high minority schools.

Mentoring. I will meet with Dr. Kern a minimum of twice per month for formal meetings and more frequently for informal check-ins as needed for the duration of the project. Specifically, for this goal, Dr. Kern will (a) facilitate collaborative relationships with school districts, (b) provide feedback on recruitment materials, (c) assist with the recruitment process, (d) provide feedback on how to navigate the complexities and challenges of working within a school district, and (e) review and provide feedback on the STAY induction materials and resources developed as part of the Development and Innovation process.

Expected outcomes. At the conclusion of this project, I anticipate having the requisite skills necessary to independently lead school-based research projects.

Goal 2: Develop Expertise in Mixed Methods and Group Design Research

Training activities. To achieve my goal of developing expertise in mixed methods and group design research (i.e., cluster randomized trials; CRTs), I will audit a course on qualitative research at Lehigh University (i.e., *Qualitative Research Methods;* see Appendix E10: Letters of Support) and attend targeted trainings. Specifically, during the summer prior to Year 1, I will attend sessions at the week-long *Qualitative Research Summer Intensive* by Research Talk Incorporated and the Odum Institute for Research in Social Sciences at UNC-Chapel Hill on the following topics: *Mixed Methods: Bridging Qualitative and Quantitative Methods and Results, Advancing Data Collection and Analysis in Qualitative and Mixed Methods Research with Visual Data Displays*, and *Writing Effective Qualitative and Mixed-Methods Research Proposals.* Additionally, I will attend a three day workshop during the fall of Year 1 on mixed methods research at the University of Michigan titled *Designing Your Mixed Methods Research Project*. I have previously received didactic instruction on cluster randomized trials (CRTs) by attending the IES CRT Summer Training Institute and auditing a course on multilevel analyses; however, I still need training around the practical application of these concepts. Thus, the training activities for this part my career development goal focus solely on mentoring.

Mentoring. I will receive mentoring from Drs. Leko (mixed method) and Spybrook (group design) during Years 1-4 and Years 3-4, respectively. Specifically, I will formally meet with Dr. Leko at least once per month for the duration of the project to discuss and receive

feedback on the (a) development of protocols for the focus groups, classroom observations, and interviews, (b) analysis of mixed methods data, and (c) preparation of manuscripts resulting from the mixed methods aspects of the project. Similarly, I will meet with Dr. Spybrook at least once per month during Years 3-4 to (a) discuss data analysis for the quasi-experimental and pilot studies, (b) refine the design for the pilot study, (c) receive assistance with the preparation of the method and results sections of manuscripts associated with the group design studies, and (d) design a CRT for a subsequent IES Initial Efficacy proposal to further test STAY. In addition to formal meetings, Drs. Leko and Spybrook are committed to dedicating time each month to reviewing materials and providing informal feedback as needed (see Letters of Agreement).

Expected Outcomes. At the conclusion of the project, I will have the requisite skills to independently design and analyze data from mixed methods and group research projects.

Goal 3: Enhance Skills in Grant Writing and Publication

Training activities. To achieve my goal of enhancing my skills in grant writing and developing an independent publication record, I will (a) attend grant writing and manuscript writing groups at Lehigh University (see Resources section), (b) attend funding webinars through IES relevant to Initial Efficacy proposals, (c) receive feedback on proposals from external reviewers, and (d) attend the IES Methods Training in Cost Effectiveness and Economic Evaluation. Specifically, I will attend (a) grant writing groups during Years 3-4 to discuss my ideas for an Initial Efficacy proposal and receive feedback on drafts of the proposal, (b) manuscript writing groups during Years 2-4 of the project to receive feedback on project-related manuscripts, (c) IES funding webinars during Years 3-4 to gain ideas of how to strengthen my Initial Efficacy proposal, and (d) the IES Methods Training in Cost Effectiveness and Economic Evaluation during Year 3 to develop my skills in cost analysis for this project and future projects. Additionally, I will receive feedback on my Initial Efficacy proposal from external reviewers, in addition to my primary mentor, using funds through Lehigh University's College of Education (see Resources section and Appendix E1: Letters of Support).

Mentoring. During my meetings with Dr. Kern, I will discuss ideas for manuscripts and receive feedback on manuscript drafts. During Years 3-4, I will develop an IES Initial Efficacy proposal in collaboration with Dr. Kern to evaluate the STAY induction program on a larger scale. Specifically, Dr. Kern will share examples of her own successful proposals, offer insight from her experience serving on grant panels, and provide feedback on a draft of my proposal.

Expected outcomes. At the conclusion of this project, I will have established an independent publication record in top-tier journals and submitted an IES Initial Efficacy proposal to further evaluate the efficacy of the STAY induction program.

SEER PRINCIPLES

I will work with my primary mentor, Dr. Kern, and my consultant, Dr. Odom, to ensure the SEER Principles are being met in this project (see Research Plan) and to develop my skills in this area so I can meet them in future projects.

PERSONNEL

This project will involve mentoring and consultation from ***five highly regarded experts with extensive experience in their respective fields***. All personnel have been strategically selected to support different aspects of Project STAY and to help me achieve my career development goals. For details on the types of mentoring and consultative activities they will provide, please see the Career Plan section. For details on the special education research projects they have conducted, please see Appendix C and attached biosketches.

Kristi L. Morin, Ph.D., BCBA-D, Principal Investigator (*41% FTE calendar year, Years 1-4*). Dr. Kristi Morin is an Assistant Professor of Special Education at Lehigh University. She was awarded her doctoral degree in Special Education in August 2017 from Texas A&M University (Advisors: Drs. Jay Ganz and Kimberly Vannest) and completed her IES postdoctoral fellowship focused on research with students with ASD in August 2019 at the Frank Porter Graham Child Development Institute, University of North Carolina at Chapel Hill (Supervisors: Drs. Samuel Odom, Kara Hume, and Brian Boyd). Dr. Morin is a Board Certified Behavior Analyst at the Doctoral Level (BCBA-D) and a previous general and special education teacher in elementary classrooms in high-minority schools. She is also a Consulting Editor for *Education and Training in Autism and Developmental Disabilities*, and the Past President of the North Carolina Division on Autism and Developmental Disabilities. Dr. Morin has published 18 peer-reviewed articles related to improving outcomes for individuals with ASD and presented on this topic extensively. Additionally, Dr. Morin has authored five online modules on evidence-based practices (EBPs) for students with ASD and co-authored a technical report by the National Clearinghouse on Autism Evidence and Practice (NCAEP) on EBPs for students with ASD.

Lee Kern, Ph.D., Internal Mentor (*approximately 5% FTE Years 1-4*). Dr. Lee Kern will be the primary mentor on the project. Dr. Kern is a Professor of Special Education and Director of both the Center for Promoting Research to Practice and the Autism Services Clinic at Lehigh University. She developed the *Iterative Process of Intervention Development* (Kern et al., 2011) that will be used in this project and has implemented it in three IES Development and Innovation projects (ATTAIN, Kern & Wehby, 2016-2019; Project PEAK, DuPaul & Kern, 2012-2015; SCCR, Kern et al., 2020-2023). Dr. Kern also has extensive experience working within school districts, having worked for over 30 years in education as a researcher, paraprofessional, general and special education teacher, behavior specialist, and consultant. Dr. Kern has received approximately $25 million in grant support from IES, NIMH, USDA, and other agencies to conduct research in the area of child disabilities and school-based research, and she has disseminated the findings from this research to both practitioners and researchers in over 100 peer-reviewed journal articles, 27 book chapters, and four books. In addition, Dr. Kern is co-Editor of *Journal of Positive Behavior Interventions*, serves on the editorial boards of 10 journals in the fields of education and disabilities, and is an experienced mentor for an IES Early Career project (Lloyd, 2016-2020). Dr. Kern will provide mentorship for the duration of the project on the development and innovation process, how to navigate the complexities of working within a school setting, disseminating findings, and the development of an IES Initial Efficacy proposal to investigate the efficacy of the STAY induction program on a larger scale.

Melinda Leko, Ph.D., Mentor (*approximately 3% FTE, Years 1-4*). Dr. Melinda Leko is a Professor and current Chair in the Department of Rehabilitation Psychology and Special Education at the University of Wisconsin-Madison. Dr. Leko has research interests in educator preparation and development to promote and support equitable educational experiences for learners with disabilities, and she has received more than $5.5 million in external funding to support these research interests, including a recent IES Development and Innovation award aimed at developing an induction program for emergency certified rural special educators (*Project ACRES;* Wilkerson et al., 2020-2024). Dr. Leko has disseminated her research findings in over 40 peer-reviewed articles, four book chapters, and one book, and she is the Co-Editor of *Teacher Education and Special Education* and Associate Editor for both researcher-focused and practitioner focused journals (i.e., *Journal of Positive Behavioral Interventions, Intervention in School and Clinic,* and *Remedial and Special Education*). Dr. Leko is an experienced mentor,

having secured two OSEP Leadership Preparation Awards where she mentored young scholars, and she has extensive experience conducting mixed methods research (see Appendix C: Summary Table of Research and Appendix D2: Letters of Agreement). For this project, Dr. Leko will provide mentoring on protocol development, data analysis, and manuscript development for the focus groups, classroom observations, and interviews, and, given her expertise with teacher induction, she will serve on the advisory board in Year 2 (see Research Plan).

Jessaca Spybrook, Ph.D., Mentor (*approximately 3% FTE in Years 3-4*). Dr. Jessaca Spybrook is a Professor of Educational Leadership, Research, and Technology at Western Michigan University, specializing in evaluation, measurement and research. She earned her Ph.D. in Education from the University of Michigan, where she also received an M.A. in Applied Statistics and a B.A. in Elementary Education. Her research focuses on improving the design of causal inference studies, particularly in education. She is an expert in power analyses and is co-author of Optimal Design and PowerUP!-Moderator, programs for conducting power analyses for main effects and moderator effects for multilevel studies. Dr. Spybrook has substantial experience designing and conducting statistical analyses for cluster randomized trials (CRT) and frequently provides consultation to research organizations on the design, implementation, and evaluation of educational studies, including to the American Institutes for Research and Abt Associates. Additionally, she is a regular invited speaker at the annual IES Summer Institute on CRTs and she has conducted numerous workshops at the Annual Meeting for the Society for Research on Educational Effectiveness. Dr. Spybrook's research has been funded by IES, NSF, and the William T. Grant Foundation. She was a National Academy of Education/Spencer Postdoctoral Fellow in 2010-11 and a Fellow for the Society for Research on Educational Effectiveness in 2015-16. For this project, Dr. Spybrook will provide mentoring on the analysis of the data from the quasi-experimental design in Year 3 and on the analysis of data from the pilot CRT in Year 4. She will also assist with writing the method and results sections of manuscripts that result from these studies and provide mentorship on the design of a subsequent IES Initial Efficacy proposal to test the effectiveness of STAY on a larger scale.

Consultants. Two experts, ***Drs. Samuel Odom and Ann Sam*** from the Frank Porter Graham Child Development Institute at UNC-Chapel Hill, have agreed to provide targeted support for specific aspects of the research plan. Dr. Odom will participate in the advisory board in Year 2 and provide consultation on the cost analysis plan in Year 4. Dr. Sam will provide consultation on the design and revision to the online modules in Years 2-3. See Letters of Support (Appendices E8-E9) for additional information on their qualifications.

Advisory Board. In addition to Drs. Leko and Odom, ***Dr. Bonnie Billingsley*** and three school-based professionals with experience in teacher induction, ASD, and/or high-minority settings will serve on an advisory board in Year 2 to provide feedback on the developed STAY induction manual and resources. See Letters of Support (Appendices E3-E7) for information on their experience and qualifications.

RESOURCES

Lehigh University (LU). LU is a comprehensive doctoral university within the high research activity category according to Carnegie Institute rankings. Substantial resources are available to fully support completion of this proposed project. The Office of Sponsored Research and Programs within the Vice-President for Research's office offers ongoing management and oversight support for all funded projects to support faculty in managing grants and monitoring spending. Additionally, the university offers **numerous supports to new faculty**, including weekly writing groups through the ADVANCE Center for Women in STEM, where members

share drafts of manuscripts and receive feedback; grant writing groups through the Office of Sponsored Research, where members receive feedback on ideas and drafts of proposals; internal funding opportunities through the Office of Sponsored Research totaling nearly $100,000 to support faculty research; and faculty travel awards through the Office of the Provost to supplement college-level travel funding to support dissemination efforts at conferences. Additionally, LU supports new faculty members through a new faculty mentoring program, where new faculty are paired with a senior faculty member within their college.

LU College of Education. The COE is ranked among the top 50 Colleges of Education by U.S. News and World Reports, with a ranking of 15 overall in per faculty member external funding and 10 in doctoral student selectivity. Within the past year, faculty have published 96 publications and over the past five years they have received more than $30 million in funding from USDOE, NIMH, and NSF. The COE is a graduate-only college, offering multiple graduate degrees, including a Ph.D. in Special Education. Faculty within the COE have access to excellent resources. My office is equipped with the latest computer technology and data analysis software, locking filing cabinets, and telecommunications equipment. Additionally, all graduate research assistants have access to office space. The COE has a full-time Director of Marketing and Communications who assists with dissemination of research findings and the development and management of websites and web pages to promote research (see Dissemination Plan).

The COE ***prioritizes research*** and offers substantial support to faculty members planning or engaging in research. For faculty planning research, the COE has a Senior Research Program Development Officer dedicated to supporting faculty in developing grant proposals, including creating the budget and ensuring the proposal adheres to guidelines set forth by the funding agency and university. Post award, the Senior Research Program Development Officer assists the faculty member with managing the grant and the Business Manager within the COE monitors spending. Additionally, the Associate Dean of Research within the COE assists faculty with both planning and engaging in research. During the planning period, the Associate Dean of Research assists the faculty member with developing the proposal, provides summer salary to pre-tenure faculty engaged in writing proposals, and recruits and compensates senior faculty members from other universities to review the proposal and provide feedback prior to submission. After funding, the Associate Dean for Research assists the faculty member with recruiting participants by facilitating partnerships with school district leaders. In addition to this recruiting support, ***the COE hosts a School Study Council on campus several times per year***. During these full-day professional development meetings, senior administrators from districts across the state of Pennsylvania, including superintendents, principals, assistant principals, and state level administrators, discuss issues relevant to school leaders. Faculty members within the COE are invited to join these meetings to develop collaborative partnerships and to propose research ideas that may be of interest to the participating school leaders.

Start-Up Package. Approximately $18,000 of my start-up funds are not spent and can be allocated to this project to address any budget gaps. All pre-tenure faculty are granted a 10-hour per week graduate assistant for the academic year, which I will use to assist with project activities. Pre-tenure faculty are also granted approximately $1,500 per year for travel, which I will use to support travel to conferences for dissemination efforts. Finally, all faculty are granted a one-semester sabbatical, which may be used pre-tenure. If additional time on the project is needed, I will take the sabbatical during Year 4 of the project to provide additional time for research and dissemination activities, as well as to develop an Initial Efficacy proposal to test STAY on a larger scale.

Appendix A
Dissemination Plan

Target Audiences and Dissemination Strategies

Project findings will be disseminated to a variety of audiences, including policy makers, educators and agencies, teacher educators, and researchers. To facilitate these efforts, I will maintain a website, supported through LU and the Center for Promoting Research to Practice (CPRP). My primary mentor, Dr. Kern, is the Director of the CPRP and will provide me with dedicated space on the CPRP website to disseminate project findings (see Appendix D: Letters of Agreement). Additionally, the College of Education (COE) at LU employs a full-time Director of Marketing and Communications (see Resources section) who will assist with the development and maintenance of the website. Specifically, I will include the following information on the website: (a) background information about Project STAY, (b) intended recipients and expected outcomes, (c) research findings, and (d) final versions of all materials and resources developed as part of the project, including the STAY induction manual and all associated forms (e.g., Treatment Implementation Index, mentor logs, introductory and ongoing trainings for mentors and novice teachers, etc.).

In addition to developing and maintaining a project website, I will disseminate project findings through (a) peer-reviewed publications and conference presentations, (b) regular updates at meetings attended by stakeholders (e.g., the LU School Study Council - see Resources section), and (c) LU's COE social media and listserv accounts. The COE's Director of Marketing and Communications maintains a listserv of ***over 31,000 individuals representing relevant stakeholder groups,*** including local school district personnel, faculty colleagues at other higher education institutions, Deans and Department Chairs at other higher education institutions (national reach), international school personnel (faculty and staff), regional school principals (PA, NJ, NY), and local and national media outlets (e.g., Lehigh Valley Live, NYTimes, Washington Post, Education Week). Additionally, the COE has over 6,000 followers across all social media accounts, including Facebook, Instagram, Twitter, and Linkedin. I will work with the COE Director of Marketing and Communications at strategic timepoints throughout the project to disseminate research findings to relevant stakeholder groups (see Appendix F: *Timeline for Project STAY Research Activities and Alignment with Career Development Activities*). See below for a description of the specific audiences I intend to target and the procedures I will use for dissemination relative to each group. <u>The procedures described below are in addition to the procedures described previously (i.e., list serv, social media, website)</u>.

Policy Makers. Pennsylvania policy makers (i.e., district and state-level education leaders) have prioritized retaining teachers in recent years, particularly teachers working in high-minority districts (Pennsylvania Department of Education, 2019). Given that research demonstrates that quality induction programs can promote retention among teachers in high-minority schools (Shockley et al., 2005), PA policy makers will likely be interested in the results of this project. As such, I will disseminate the results in Years 2-4 through presentations at conferences typically attended by PA policy makers (i.e., PA Council for Exceptional Children's Council for Administrators of Special Education [PA CASE] and Pennsylvania's Association of School Administrators [PASA]), and through an annual update at the LU School Study Council (see Resources section and Appendix E: Letters of Support).

Educators and Agencies. The information learned as a result of this study (e.g., what skills and knowledge novice teachers are lacking and what components of an induction program

are feasible and effective) will likely be of interest to educators and agencies in Pennsylvania, such as administrators at the Intermediate Units, regional educational service agencies that function a step above local school districts but below the state department of education. To disseminate the findings from this project, I will create a Research Snapshot each year of the project, beginning in Year 2, summarizing the project and results in practitioner friendly terms and easy to interpret graphics. The Research Snapshots will be accessible through the project website, and I will also distribute them via email to all Intermediate Units throughout Pennsylvania in Years 2-4. Additionally, I will share information about project outcomes and materials in Years 2-4 of the project by publishing results in practitioner-oriented journals (e.g., *Teaching Exceptional Children, Intervention in School and Clinic, Educational Leadership*) and presenting at conferences with a high rate of practitioner attendance (i.e., Council for Exceptional Children). Although I will be gathering data during Year 1, the data will not be analyzed until the end of Year 1 and thus will not be ready to share until Year 2 (see Timeline in Appendix F).

Teacher Educators. Through this project, I will be collecting data on the instructional skills that novice teachers are lacking. During Years 1-2, this information will be gathered through focus groups and classroom observations, and during Years 3-4 this information will be gathered through interviews. Teacher educators will likely be interested in using this information to improve their teacher preparation programs. As such, I will disseminate information about project findings to teacher educators in Years 2-4 by presenting at conferences that are attended by teacher educators. Specifically, I will present findings at the Council for Exceptional Children (CEC) conference during Years 2-4, at the CEC Teacher Educator Division (CEC-TED) conference during Years 3-4, and at the PA Council for Exceptional Children's Division on Autism and Developmental Disabilities (PA DADD) conference during Years 2-4.

Researchers. Researchers wishing to replicate or extend the results from this research project may be interested in the project findings. To support my third Career Goal (i.e., enhance my skills in grant writing and publication), I will work with my primary mentor, Dr. Kern, to prepare manuscripts describing the results from the pilot study for submission to highly visible, top-tier, researcher focused outlets (e..g, *Exceptional Children, Autism Research, Journal of Autism and Developmental Disorders*), assuming significant group differences. I will also prepare and submit a conceptual paper describing the program development process to a peer-reviewed journal with a special education/autism focus. In the event that the pilot efficacy trial does not result in statistically significant between-group differences, I will still report data on the characteristics of individual teachers who were responsive to the STAY induction program. In addition to peer-reviewed publications, I will disseminate project findings through presentations at researcher-focused conferences. Specifically, I have budgeted for travel to the International Society for Autism Research (INSAR) during Year 4 to target dissemination to researchers.

Appendix C
Summary Table of Research

Principal Investigator: Kristi Morin (Lehigh University)				
Title of Project	*Role*	*Brief Description of Project & Outcomes/Products*	*Funding*	*Duration*
Diagnosing Autism in Africa **(ongoing)**	PI	The purpose of this project is to develop a low-cost, culturally appropriate screener to identify autism spectrum disorder in Sierra Leone. Our team has reviewed commonly used screeners in the United States for various indicators of feasibility (e.g., cost, readability, time to administer, training required to administer, etc.) and common assessment themes. This fall we will use this information to draft a screener to be field tested in a future trip to Sierra Leone using focus groups and interviews to ensure the screener is relevant, feasible, and culturally appropriate.	$15,000 Lehigh University – Office of Creative Inquiry	2020-present
Non-Concurrent Multiple Baseline Designs in Special Education: Current Practice and Future Directions **(ongoing)**	PI	This project is a systematic review of non-concurrent multiple-baseline and multiple-probe designs in special education. Our team aims to describe how these designs are currently being used in special education (e.g., participants, settings, implementers, dependent variables, etc.) and provide guidance on methods for increasing rigor. We are in the final stages of coding full-texts from the first author and updated searches and plan to analyze data this fall. **Co-PIs: Thomas Kratochwill (UW-Madison) and Esther Lindstrom (Lehigh University)**	Start-up funds	August 2019-current
Stress-Reductive Interventions for Parents of Children with ASD: A Meta-Analysis **(ongoing)**	PI	This project aims to identify which interventions are effective for reducing stress among parents of children with autism and which intervention components produce the largest effects. Our team is	Start-up Funds	August 2019-current

		in the final stages of variable coding and will begin data extraction and analysis this fall. **Co-PI: Ee Re Hong (Kongju National University)**		
Math Interventions for Students with Autism Spectrum Disorder: A Single-Case Meta-Analysis **(ongoing)**	Co-PI	This project aims to identify which math interventions are effective for students with ASD and which intervention characteristics moderate their effectiveness. We are currently in the data extraction and analysis phase. **PI: Corey Peltier (University of Oklahoma)**	No Funding	August 2019-current
Knowledge of Evidence-Based Practices and Frequency of Selection Among School-Based Professionals of Students with Autism **(recently completed)**	PI	For this project, our team analyzed data from more than 67,000 pretests completed by over 22,000 Autism Focused Intervention Resources and Modules (AFIRM) users to provide information on school-based professionals' selection of evidence-based practices, knowledge of evidence-based practices, and average number of evidence-based practices selected. Results of an analysis of variance test revealed statistically significant differences between groups for each of these variables. This manuscript has been resubmitted to the *Journal of Special Education* with minor revisions. **Co-PIs (UNC-Chapel Hill): Ann Sam, Brianne Tomaszewski, Victoria Waters, Sam Odom**	Funded through IES Postdoctoral Training Grant Awarded to Drs. Odom, Hume, & Boyd	2019-2020
Paraprofessional Experiences of Roles, Training, and Communication when Working with Students with Autism: A National Survey **(recently completed)**	PI	In this study, our team surveyed 325 paraprofessionals and analyzed responses on their (a) roles and responsibilities, (b) applied knowledge from different types of professional development, (c) perceived barriers to professional development, and (d) types and timing of communication with their supervising teachers. The results of this study have direct implications for individuals interested in developing a model of professional development that	Funded through IES Postdoctoral Training Grant Awarded to Drs. Odom, Hume, & Boyd	2019-2020

		will meet the unique needs of paraprofessionals who work with students with autism spectrum disorder. This manuscript is currently under review at *Teacher Education and Special Education.* **Co-PIs (UNC-Chapel Hill): Sallie Nowell, Jessica Steinbrenner, Ann Sam, Victoria Waters, Sam Odom**		
Differential Effects of Video Analysis for Special Educators Related to Intervention Characteristics, Dependent Variables, and Student Outcomes: A Meta-Analysis of Single-Case Research **(recently completed)**	PI	In this study, our team conducted a meta-analytic investigation of single-case studies that used video analysis with special educators to determine if there are differential effects related to implementation characteristics and dependent variables. Additionally, we reported an omnibus effect size on student outcomes for studies that report these data. This project extended prior work (Morin et al., 2019), where we used meta-analytic techniques to calculate an overall effect size for video analysis and conduct moderator analyses related to publication type, methodological quality, participant characteristics, and instructional characteristics. This manuscript has been accepted for publication in the *Journal of Special Education Technology*. **Co-PIs: Jay Ganz (Texas A&M University), Kimberly Vannest (University of Vermont)**	$5,000 Research Scholar Award (Texas A&M University)	2016-2019
Primary Mentor: Lee Kern (Lehigh University)				
Title of Project	*Role*	*Brief Description of Project & Outcomes/Products*	*Funding*	*Duration*
Supported College and Career Readiness (SCCR) for Secondary Students with Emotional and Behavioral Problems	PI	Development and Innovation project that aims to develop and pilot test a multi-component program that augments typical school-based college and career readiness activities for students with or at risk for emotional and behavioral disorder.	IES - NCSER	2020-2023

Early Intervention for Young Children at Risk for ADHD: Evaluating Efficacy and Delivery Format for Behavioral Parent Education	Co-PI	Initial Efficacy project that aims to examine the effects of face-to-face and online behavioral parent education, using the intervention *Promoting Engagement for ADHD Pre-Kindergartners (PEAK*), on parent knowledge of and fidelity with intervention strategies, parent treatment acceptability, child and parent behavior, and child early academic skills for families of young children at risk for attention-deficit/hyperactivity disorder (ADHD).	IES - NCSER	2020-2025
Developing Functional Behavior Assessment Maps for Students with Persistent Challenging Behavior: A Guiding Framework for Practitioners	Mentor	Early Career Development and Mentoring project that aimed to develop a decision framework (FBA-MAP) designed to guide behavior specialists' selection of assessment strategies based on individual student and classroom factors and a comprehensive training manual to support behavior specialists and teachers in collaboratively implementing individualized assessment strategies in classrooms. **PI: Blair Lloyd**	IES - NCSER	2016-2020
Adapting Tier 2 Interventions for Non-Responsive Students in Elementary Schools	PI	Development and Innovation project that aimed to develop an *Adaptive Intervention Framework (AIF)* that will facilitate the systematic identification and modification of Tier 2 interventions within the context of a multi-tiered system of behavior support.	IES - NCSER	2016-2020
Early Intervention for Young Children with ADHD: Developing Strategies to Enhance Parent Engagement	Co-PI	Development and Innovation project that aimed to further develop and refine a parent education program to increase parent engagement with early intervention for young children with ADHD and to develop an alternative format (web-based) of parent education to increase parent accessibility to and engagement with the intervention.	IES - NCSER	2012-2015
National Research and Development Center on Serious	PI	Research and Development Center project that aimed to develop and evaluate the efficacy of a package of	IES - NCSER	2008-2013

Behavior Disorders at the Secondary Level		intervention strategies designed to reduce the significant behavioral and academic challenges experienced by high school students with behavior disorders.		
Mixed Methods Mentor: Melinda Leko (University of Wisconsin - Madison)				
Title of Project	*Role*	*Brief Description of Project & Outcomes/Products*	*Funding*	*Duration*
Addressing emergency Certification in Rural Education Settings (ACRES)	Co-PI	Development and Innovation project aimed at developing and pilot testing a professional development intervention focused on evidence-based and high-leverage practices (EBPs and HLPs) to enhance the behavior management capabilities and self-efficacy of emergency certified special educators working in rural school districts.	IES -NCSER	2020-2024
Scholarship in Teacher Education (SITE)	PI	OSEP 325D leadership preparation project designed to prepare a cadre of five scholars to assume leadership roles in (a) teaching, (b) research, and (c) service in higher education, with specific expertise in special education teacher education that promotes equity and inclusion for high-need students with disabilities.	OSEP	2019-2023
UW-Madison Special Education Teacher Residency Program (UW-Madison SET)	Co-PI	U.S. Department of Education Teacher Quality Project designed to address the Wisconsin special education teacher shortage and improve student achievement through a 14-month graduate program serving 40 “SET residents” that includes: (1) a rigorous recruitment and selection process; (2) a 44-credit graduate program in special education; (3) a 10-month teaching residency in high-need partner LEAs, (4) a 2-year induction and professional development program, and (5) a comprehensive formative and summative evaluation plan.	U.S. DOE	2019-2024
The Role of Systems Thinking and Change in Ameliorating the	Co-PI	AERA mini-conference project designed to assemble critical stakeholders to focus on the special education	AERA	2019-2020

Special Education Workforce Crisis, Improving Preparation and Support, and Fortifying the Pipeline to Improve Outcomes for Students with Disabilities: Research, Policy, and Practice		workforce crisis. The purpose of the conference is to engage stakeholders in investigating "whole systems thinking and systems change", using multiple methods, to reveal new ways of thinking about ameliorating the SET workforce crises, improving preparation and support, and fortifying the pipeline to improve educational and life outcomes for students with high and low incidence disabilities.		
Rural Special Educators: Surveying the Landscape, Identifying Inroads	Co-PI	Interview study designed to explore and understand the contexts and preparation needs of special educators working in rural school districts.	Spencer Foundation	2019-2020
Researchers in Intensive Interventions, Tiered Systems, and Evidence-Based Practices (KU RITE)	PI	OSEP 325D leadership preparation project designed to prepare a cadre of five doctoral scholars to conduct rigorous inquiry into evidence-based practices (EBPs) to effectively and efficiently meet the needs of students with disabilities – particularly those with the most intensive educational needs. Scholars will be fully prepared to support the identification and advancement of EBPs via research activities and prepare future educators to utilize these EBPs within and beyond tiered systems in partnership with the general education community.	OSEP	2016-2021 (PI from 2016-2017)
Examining the Student Teaching Experience of Special Educators from Multiple Program Pathways	PI	Exploratory mixed-methods study designed to compare and contrast the student teaching experience and outcomes of individuals enrolled in a traditional special education preservice teacher preparation program and individuals hired as emergency certified special educators.	UW-Madison	2018-2019
Group Design Mentor: Jessaca Spybrook (Western Michigan University)				
Title of Project	*Role*	*Brief Description of Project & Outcomes/Products*	*Funding*	*Duration*
A Statistical Framework and Tools for Planning Multilevel	Co-PI	An ECR-HER Core Research project that aims to (1) to develop a statistical framework that guides the design of cost-effectiveness studies in terms of	NSF	2020-2023

Randomized Cost-Effectiveness Trials		power, sample sizes, and minimum detectable effect size (MDES); (2) to assess and substantiate the precision and utility of the resulting formulas through Monte Carlo simulations; (3) to implement the costing formulas in an accessible and user-friendly software program, PowerUp!; and (4) to develop an empirical catalogue of parameter values to guide researchers in the judicious implementation of these analyses.		
Professional Development to Support an Elementary School Science and Integrated Language Curriculum	Co-PI	A Discovery Research K-12 project that is a late-stage design and development project that seeks to implement and assess the potential efficacy of the SAIL program.	NSF	2020-2024
Improving Evaluations of STEM Programs: An Empirical Investigation of Key Design Parameters	PI	A Discovery Research K-12 and ECR-EHR Core Research Project that aims to improve the internal validity and cost-efficiency of evaluations of STEM interventions by increasing the accuracy of estimates for the full range of parameters needed to conduct power analyses, particularly when the teacher level is included.	NSF	2020-2023
Designing Multisite Mediation Studies to Track Teacher Development Processes in Mathematics	Co-PI	An ECR-EHR Core Research project that aims to develop a framework to direct the effective and efficient design of multisite mediation studies of teacher development in mathematics. Specifically, this project proposes to develop (a) the statistical theory underlying the effective and efficient design of multisite mediation studies, (b) empirical estimates of the parameters needed to design teacher development studies, and (c) software to carry out formulas and calculations using free and user-friendly software and workshops to train a broad range of researchers.	NSF	2018-2021

An Experimental Test of Pre-Populating a Study Registry Entry on Completion Rates and Accuracy of Information	PI	A project funded by the LJAF foundation to assess the efficacy of pre-populating registry entries in REES on the rate of completed registrations.	Laura and John Arnold Foundation	2018-2019
Institutionalizing, Sustaining, and Enhancing the Registry of Efficacy and Effectiveness Studies	Co-PI	In this project, researchers promoted the usefulness, sustainability, and visibility of the Registry of Efficacy and Effectiveness Studies (REES), a registry of impact studies in education, by leveraging the design and development expertise at SREE with the data management expertise and infrastructure at the University of Michigan's Inter-University Consortium for Political and Social Research (ICPSR). Specifically, researchers at SREE and ICPSR worked together to develop and refine a single-case design component to add to REES; move REES from a stand-alone platform to one that is maintained and operated by ICPSR; and actively promote REES through the ICPSR website and social media, targeted outreach, meetings, and conferences.	IES	2018-2020
A User-Friendly Tool for Designing Cluster Randomized Trials with Power and Relevance	Co-PI	A Methodological Innovation project that aims to develop a user-friendly webtool for planning cluster randomized trials (CRTs) based on generalizability and statistical power for testing moderator effects, not just average treatment effects.	IES - NCER	2017-2020
Planning Cluster Randomized Trials: An Empirical Investigation of Design Parameters for Studies of Science Teacher Interventions	PI	A Project and Program Evaluation project that aimed to build capacity for conducting cluster randomized trials (CRT), a design permitting causal inference that is especially important in education given the clustered nature of the U.S. school system, by fleshing out a growing database of CRT parameter estimates to include those for K-12 science teacher interventions. The study (1) estimated effect sizes	NSF	2015-2019

		that used meta-analysis with a reasonable plan for identifying the relevant literature, coding, and adjusting for publication bias and (2) estimated intra-class correlation coefficients (ICCs) and R-squared values for both 2- and 3-level CRT models across a range of covariates using a variety of data sources.		
Power Analyses for Moderator and Mediator Effects in Cluster Randomized Trials	PI	A Project and Program Evaluation project that aimed to advance understanding of cluster randomized trials by developing power formulas and software for tests of multi-level moderation and mediation, as well as the combination of the two.	NSF	2014-2018
Designing a Registry of Effectiveness Studies in Education	PI	A project funded by the Institute of Education Sciences to develop a registry of impact studies in education.	Society for Research on Educational Effectiveness	2018
Advancing Methodological Knowledge in STEM Education Research: An Empirical Investigation of Design Parameters for Planning Cluster Randomized Trials in Science Education	Co-PI	A Project and Program Evaluation project that aimed to develop the statistical resources to design and conduct rigorous cluster-randomized trials (CRTs) in science education research; increase the accuracy of the range of parameters needed to conduct power analyses; and develop statistical resources for the science research community available through a free power analysis software package.	NSF	2011-2015
Building Capacity for the Design of Group Randomized Trials	PI	This project provided support for Optimal Design and other methodological work related to statistical power for cluster randomized trials.	William T. Grant Foundation	2009-2014
Tracking the Research Evidence from Group Randomized Trials in Education	PI	This project examined a subset of evaluation studies funded by IES to assess the extent to which findings reached research and practice audiences. Specifically, Spybrook identified various dissemination outlets, the frequency with which the different outlets cover findings from these studies,	William T. Grant Foundation	2012

		and the time lag between when a study is funded and when the research evidence is disseminated.		
Examining the Changes in Methodology that Occur between the Design and Implementation of Field Trials in Education	PI	A Methodological Innovation project that aimed to gather evidence about the changes in methodology that occur between the design and implementation of cluster randomized trials used in education research. Specifically, the researchers examined the changes from what was planned to what was implemented in: (1) the research design; (2) sample sizes; (3) outcome measures; (4) the intervention itself; and (5) expected rates of attrition.	IES - NCER	2009-2011

Appendix D
Letters of Agreement

D1. Letter of Agreement from Primary Mentor – Dr. Lee Kern

D2. Letter of Agreement from Qualitative Mentor – Dr. Melinda Leko

D3. Letter of Agreement from Statistical Mentor – Dr. Jessaca Spybrook

LEHIGH UNIVERSITY

Department of Education and Human Services
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http://ed.lehigh.edu/

August 7, 2020

Dear Kristi,

I am writing to express my support for *Project STAY: Supporting Teachers of Autism in Years 1-3,* an IES Early Career Development and Mentoring (CFDA 84.324B) project. I know that the purpose of this award is to support the development of talented scholars who will become outstanding researchers in the field over the next few decades. Having worked closely with you during your first year as an Assistant Professor at Lehigh, I believe you are an ideal candidate for this award. As such, I enthusiastically agree to act as your primary mentor for all four years of this project, should it be funded.

As your mentor, I agree to engage in the mentoring activities stipulated in the proposal. Specifically, I will assist you with meeting your career development goal of increasing your capacity to conduct school-based research by (a) facilitating collaborative relationships with local school districts, (b) providing feedback on recruitment materials, (c) assisting with the recruitment process, and (d) helping you navigate the complexities and challenges of working within a school district. Additionally, I will help you meet your career development goal of enhancing your skills in grant writing and publication by providing feedback on drafts of manuscripts and an Initial Efficacy proposal, sharing examples of my own funded IES proposals, and offering insight from my experience serving on grant panels. Finally, I will provide guidance for the development and innovation process by reviewing and providing initial and ongoing feedback on your research plan and on the materials and resources developed as a part of this project.

As you know, I developed the *Iterative Process of Intervention Development* that you are proposing to use in this project, and I have implemented it in three IES Development and Innovation projects. Additionally, I have extensive experience working within school districts, a strong record of securing grant funding, and a proven history of disseminating the results of my work in top-tier outlets. I am also an experienced mentor for a funded IES Early Career project. As such, I believe my background and experiences are well suited to helping you meet your career development goals and successfully completing your research project.

I understand that acting as your mentor will require approximately eight hours of my time each month (5% FTE) for the duration of the project, and I am committed to dedicating this time to engaging in the activities outlined above. I also understand that you will have two co-mentors, Dr. Melinda Leko from the University of Wisconsin-Madison in Years 1-4, and Dr. Jessaca Spybrook from Western Michigan University in Years 3-4, to support you in your goal of increasing your capacity to conduct mixed methods and group design research; I look forward to working with you and Drs. Leko and Spybrook in this project.

I believe that your proposed research and career plans are well aligned with my background and expertise, and I am happy to support you, as your primary mentor, in your growth and development as a researcher. In addition, as the Director of the Center for Promoting Research to Practice at Lehigh, I am committed to providing you with dedicated space on our website to disseminate information about Project STAY. Best wishes on the grant!

Sincerely,

Lee Kern, Ph.D.
Professor of Special Education
Director of the Center for Promoting Research to Practice
Director of Lehigh University's Autism Services
Lehigh University
lek6@lehigh.edu
610-758-3267

August 11, 2020

Dear Kristi,

I am writing to enthusiastically express my support for *Project STAY: Supporting Teachers of Autism in Years 1-3*. I agree to act as your co-mentor during Years 1-4 of this IES Early Career Development and Mentoring (CFDA 84.324B) project, should it be funded. The research project strongly aligns with my areas of research interest, and my experience with mixed methods research will help you achieve your second career development goal of developing expertise in this area.

As your co-mentor, I agree to engage in the mentoring activities stipulated in the proposal. Specifically, I will support you in developing protocols for the focus groups and classroom observations in Years 1-2 and for the interviews in Year 3. Additionally, I will mentor you in data analysis for these data and assist you with preparing manuscripts that result from this research. Finally, given my content expertise with teacher development and induction, I will also serve on your advisory board in Year 2. I understand this will entail reviewing the developed induction program manual and resources and providing feedback during a remote session with other advisory panel members. I am committed to providing support for developing your skills in mixed methods research to further your line of research in teacher development, a crucial area of research that is closely aligned to my own.

I have extensive experience using mixed methods research to examine issues in teacher development and preparation, including teacher induction. I was recently awarded an IES Development and Innovation award, *Project ACRES: Addressing Emergency Certification in Rural Education Settings*, that aims to develop and pilot test a professional development intervention focused on evidence-based and high-leverage practices to enhance the behavior management capabilities and self-efficacy of emergency certified special educators working in rural school districts. For this project, we will be using mixed methods research in the development phase, similar to this proposal. In addition, I have completed and disseminated findings from several mixed methods studies related to teacher education and induction. One study examined the influences of special education preservice teachers' appropriation of pedagogical tools for teaching reading to students with disabilities. Another examined the influences on secondary special educators' reading instructional practices, including factors related to teacher preparation, professional development, and induction. Given the alignment of both my research interests and my methodological expertise to your research and career

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WISCONSIN
UNIVERSITY OF WISCONSIN–MADISON

development plans, I believe I am well suited to helping you meet your goal of developing expertise in mixed methods research by supporting the related activities outlined in your research plan.

I understand that acting as your co-mentor will require approximately 3% FTE or five hours of my time each month in Years 1-4 of the project, and I am committed to dedicating this time to engaging in the activities outlined above. I know that your primary mentor is Dr. Lee Kern from Lehigh University and that you will be working with her for all four years of the project. I also know that you will have an additional mentor, Dr. Jessaca Spybrook from Western Michigan University, in Years 3-4 to support you with data analysis from the quasi-experimental and randomized control trial experiments. I look forward to collaborating with both Drs. Kern and Spybrook to support you in meeting your career goals and ensuring the successful completion of your research project.

I believe that your proposed research and career plans are well aligned with my background and expertise, and I am happy to support you, as your co-mentor, in your growth and development as a researcher. Best wishes on the grant!

Sincerely,

Melinda Leko, Ph.D.
Professor of Special Education
Chairperson, Department of Rehabilitation Psychology and Special Education
University of Wisconsin-Madison
leko@wisc.edu
608-263-5751

WESTERN MICHIGAN UNIVERSITY

Educational Leadership, Research and Technology
College of Education and Human Development

August 17, 2020

Dear Kristi,

I am writing to enthusiastically express my support for *Project STAY: Supporting Teachers of Autism in Years 1-3*. I agree to act as your co-mentor during Years 3-4 of this IES Early Career Development and Mentoring (CFDA 84.324B) project, should it be funded. The research project strongly aligns with my area of methodological expertise and research interests, and I look forward to sharing my knowledge to help you achieve your career goal of developing expertise in group design research.

As your co-mentor, I agree to engage in the mentoring activities stipulated in the proposal. Specifically, I will support you in analyzing data from the quasi-experimental study in Year 3 and from the cluster randomized trial in Year 4. Additionally, I will mentor you in refining the design and data analysis plan for the pilot study in Year 4 and support you in writing the method and results sections for manuscripts that result from this research. Finally, I will assist you with designing a larger efficacy study to further evaluate the STAY induction program in a subsequent IES Initial Efficacy proposal.

My background and experiences are strongly aligned with the research plan and your career development goals for this project. I have nearly two decades of experience conducting power and statistical analyses for cluster randomized trials, and I regularly consult and deliver trainings on these topics, including at the annual workshop on cluster randomized trials sponsored by IES. Additionally, I have served on a number of advisory boards for research organizations where I provide support for the design, implementation, and analysis of evaluations of education research, including the American Institutes for Research and Abt Associates. Finally, I have secured more than $5 million to improve the quality of the designs and power analyses of group randomized trials. I am a co-author of Optimal Design, a program for conducting power analyses for main effects for multi-level studies, and PowerUp!-Moderator, a program for conducting power analyses for moderator effects for multi-level studies. Given my methodological expertise in designing and analyzing data from cluster randomized trials in education, I believe I am well suited to helping you meet your goal of developing expertise in group design research by supporting the related activities outlined in your research plan.

I understand that acting as your co-mentor will require approximately 3% FTE or five hours of my time each month in Years 3-4 of the project, and I am committed to dedicating this time to engaging in the activities outlined above. I know that your primary mentor is Dr. Lee Kern from Lehigh University and that you have another co-mentor, Dr. Melinda Leko from the University of Wisconsin-Madison. I understand that you will be working with Drs. Kern and Leko for all four years of the project, and I look forward to collaborating with Drs. Kern and Leko to support

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you in meeting your career goals and ensuring the successful completion of your research project.

I believe that your proposed research and career plans are well aligned with my background and expertise, and I am happy to support you, as your co-mentor, in your growth and development as a researcher. Best wishes on the grant!

Sincerely,

Jessaca Spybrook, Ph.D.
Professor of Evaluation, Measurement and Research
College of Education and Human Development
Western Michigan University
jessaca.spybrook@wmich.edu
269-387-3889

Appendix E
Letters of Support

E1. Letter of Support from Dean Gaudelli, College of Education, Lehigh University

E2. Letter of Support from Bethlehem Area School District
Please note that due to the uncertainties surrounding COVID-19, I was only able to secure a letter of "potential support" from one district at this time. However, if funded, I will use existing connections through the Lehigh University School Study Council (see E11. Letter of Support from the Director of the School Study Council) and school leaders participating in the advisory board (see E3-E7. Letters of Support from Advisory Board Members) to recruit additional schools.

E3 – E7. Letters of Support from Advisory Board Members
Please note in E8, Letter of Support from Dr. Samuel Odom, and D2, Letter of Agreement from Dr. Melinda Leko, that Drs. Odom and Leko will also serve on the Advisory Board.

E8 – E9. Letters of Support from Consultants (Drs. Odom and Sam)

E10. Letter of Support from Dr. Sara Kangas (Instructor of Qualitative Course)

E11. Letter of Support from Dr. Brian Osborne (Director of LU School Study Council)

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August 3, 2020

IES Early Career Competition Reviewers:

I am pleased to support the application of Dr. Kristi Morin for an IES Early Career Award. Dr. Morin began her position as an Assistant Professor in Special Education at Lehigh University in 2019 upon completion of her postdoctoral education at the University of North Carolina at Chapel Hill. She is a very talented scholar who has developed an impressive proposal with an outstanding team of mentors and consultants to help her achieve her ambitious career goals.

Dr. Morin has been highly productive during her first year as an Assistant Professor and my colleagues and I have been very pleased with her performance. Since beginning her position in August of last year, she has had five manuscripts accepted for publication, submitted six new manuscripts, won an internal award to support her research, and had twelve scholarly presentations accepted to high-profile, peer-reviewed conferences in her field, including one invited talk with full travel support. These accomplishments are in addition to her already strong record of scholarship developed during her doctoral program and postdoctoral position. In addition to her scholarly achievements, Dr. Morin has proven to be a valued and well-respected colleague. During her annual review, faculty noted that she was kind, collegial, and always willing to step in where needed to support the program and department. Given Dr. Morin's current trajectory, she is well positioned to become a leader in her field.

Dr. Morin's proposal, entitled "Project STAY: Supporting Teachers of Autism in Years 1-3" ambitiously aims to develop an induction program for novice teachers of students with autism spectrum disorder in high-minority schools. Given Dr. Morin's previous experience as a classroom teacher in a high-minority school, she is an excellent choice to carry out this work. Dr. Morin has a deep understanding of the complexities of working in this setting and has a strong desire to support novice teachers who are struggling with how to best instruct the students with autism in their classrooms. She has the compassion and fortitude necessary to complete this project given her personal experience with the challenges these teachers face. I also note that her primary mentor, Dr. Lee Kern is a seasoned researcher with the expertise and experience needed to support Dr. Morin in this work.

The College of Education is highly supportive of research and offers a number of supports to faculty. First, we provide all pre-tenure faculty with a 10-hour per week graduate assistant to support their research for the duration of their tenure and promotion period. We also provide new faculty substantial start-up funds, a reduced teaching load (the normal teaching load for tenure track faculty engaged in research is four courses per year), and reduced service obligations. In addition, we have an Associate Dean for Research that supports faculty in preparing grant proposals and a Research

Program Development Officer who supports faculty with budget development and management. Finally, we have funds to compensate external reviewers to provide feedback to faculty on grant proposals prior to submission. All of these supports are in addition to the ones offered to new faculty by the university, such as a faculty mentoring program, grant writing groups through our Office of Sponsored Research, and university-wide manuscript writing groups. Our goal, both within the College of Education and at the university-level, is to provide faculty with the resources and supports necessary to conduct high-quality research and to achieve their professional goals.

To support the research outlined in this proposal, the College of Education will provide Dr. Morin course-reductions commensurate with the funding levels, including at least two course reductions per year. In addition, we will work with Dr. Morin to secure any technology support she needs for conducting this research, including software for collecting and analyzing data and a secure electronic space for data storage. Additionally, we will support Dr. Morin's dissemination efforts by communicating the results of her research to relevant stakeholders through our extensive list serv, social media accounts, and newsletters.

My colleagues and I all strongly support Dr. Morin's proposal and are committed to providing her with the supports needed to successfully complete this project. Please do not hesitate to contact me if I can provide additional information.

Sincerely,

William Gaudelli, Ed.D.
Dean and Professor
College of Education
Lehigh University
wig318@lehigh.edu
610-758-6223

BETHLEHEM
AREA SCHOOL DISTRICT

August 17, 2020

Dr. Kristi Morin
College of Education
Lehigh University
111 Research Drive
Bethlehem, PA 18015

Dear Dr. Morin,

I am pleased to express Bethlehem Area School District's potential interest in participating in *Project STAY*, a project that aims to develop an induction program for novice teachers of students with autism spectrum disorder (ASD) working in high-minority schools in elementary settings. As you know, the Pennsylvania Department of Education has prioritized retention among teachers, particularly those working with vulnerable populations as is proposed in this project. If you are awarded funding, we hope to collaborate with Lehigh University in this important and valuable line of work; however, at the present time we can only offer our potential support to this project given how far out the research will begin and the uncertainty that COVID-19 presents.

Based on the information provided, I understand that the induction program will be developed iteratively across three phases over four years, beginning in the summer of 2021, with multiple rounds of feedback from stakeholders to ensure the program is acceptable and feasible. I understand that Years 1-2 will consist of (a) approximately 10 classroom observations of novice teachers, (b) four focus groups consisting of 6-8 school personnel from four different stakeholder groups (i.e., novice teachers of children with autism, veteran teachers of children with autism, school and district level administrators, and district level specialists, coaches, or technical assistance providers) and lasting 90-120 minutes each, and (c) feedback on the developed induction program manual and resources from an advisory board consisting of school district leaders, administrators, experts in the field, and teachers of students with ASD. I also understand that Year 3 will consist of small-scale implementation of the program with feedback from teachers and administrators and that you will use the data from Year 3 to make needed revisions. Finally, I understand that you will implement the revised program a final time in Year 4 to test its effectiveness with a larger pool of teachers and students.

We see *Project STAY* as a valuable opportunity to develop an induction program that meets the unique needs of novice teachers of students with ASD working in high-minority schools. At the present time, we offer our potential support; if funded, we will reevaluate our ability to assist with the following project activities: (a) recruitment of teachers and students, (b) scheduling of weekly remote mentoring sessions between novice and mentor teachers, (c) video recording of teacher practice for the purpose of feedback by the mentor, and (d) monthly classroom observations by the mentor and novice teacher. Best of luck on the grant!

Sincerely,

Dr. Jack P. Silva
Assistant Superintendent/Chief Academic Office
jsilva@basdschools.org

VirginiaTech
College of Liberal Arts and Human Sciences

School of Education
War Memorial Hall Room 205
370 Drillfield Drive
Blacksburg, Virginia 24061
540-231-8206

August 14, 2020

Kristi Morin, Ph.D., BCBA-D
College of Education, Lehigh University
111 Research Drive, Bethlehem, PA 18015

Dear Dr. Morin,

Thank you for the invitation to serve on your advisory board related to developing an induction program for novice teachers of students with autism working in high-minority schools. I am excited to hear about the proposed work of *Project STAY (Supporting Teachers of Autism in Years 1-3)*, and I am happy to lend my expertise to your team. Nationwide, there is a tremendous need to support novice teachers to promote retention, especially among novice teachers of students with autism working in high-minority schools where attrition is especially high. Your project meets this need through an induction program that is specially designed to meet the unique needs of this population. I am enthusiastic about the opportunity to provide insight related to your induction program and associated resources.

I have been involved with supporting teachers as an administrator and also have conducted numerous studies on new special educators' experiences, mentoring, and induction. In addition, I have studied the qualification of teachers in high need schools and they are in particular need of support, as often they have less preparation. Clearly induction is crucial for new teachers' transition into teacher, their development, and their effectiveness. Project STAY has potential to make a difference for this specific group of teachers.

If funded, I will review the developed induction program manual and resources during Year 2 of the project (2022-2023) and provide feedback during a remote session with the advisory panel. I understand that during this session, the other panel members and I will work toward consensus on the most important and feasible features of the induction program and discuss needed revisions or additions to the developed resources. I understand that my time commitment for reviewing the program and participating in the panel will be approximately 8-10 hours, and that I will be compensated $1500 for my contributions to the group.

I am looking forward to working with you and the other members of the advisory board to develop an induction program that will support novice teachers of students with autism working in high-minority schools.

I greatly look forward to working with your team on this important study.

Sincerely,

Bonnie S. Billingsley, Professor
School of Education
College of Human Resources and Education
Blacksburg, VA 24061-0313

Mastery Charter Schools

August 13, 2020

Kristi Morin, Ph.D., BCBA-D
College of Education, Lehigh University
111 Research Drive, Bethlehem, PA 18015

Dear Dr. Morin,

Thank you for the invitation to serve on your advisory board related to developing an induction program for novice teachers of students with autism working in high-poverty schools. I am excited to hear about the proposed work of *Project STAY (Supporting Teachers of Autism in Years 1-3)*, and I am happy to lend my expertise to your team. Nationwide, there is a tremendous need to support novice teachers to promote retention, especially among novice teachers of students with autism working in high-minority schools where attrition is especially high. Your project meets this need through an induction program that is specially designed to meet the unique needs of this population. I am enthusiastic about the opportunity to provide insight related to your induction program and associated resources.

In my role as a Director of Specialized Services for Mastery, I support new teacher training and induction for all special educators, including those who serve our students with autism. Our schools are located throughout Philadelphia and Camden and are part of each city's turnaround school programs, where we serve neighborhood catchment areas of predominantly minority and high poverty schools. Out of our almost 14,000 students, more than ninety-eight percent are minority. Close to ninety-five percent of our families are eligible for free and reduced lunch. We also have a high population of students with disabilities and regional programs that provide supports for our students with low-incidence disabilities of the most complex nature. In supporting schools, we continue with the struggle of retaining high quality educators, particularly for those most complex classrooms, including students with significant autism. Providing high quality supports, as well as quality training and development, is critical to that retention – and the subsequent improved services we are able to provide when we retain educators in our classrooms.

If funded, I will review the developed induction program manual and resources during Year 2 of the project (2022-2023) and provide feedback during a remote session with the advisory panel. I understand that during this session, the other panel members and I will work toward consensus on the most important and feasible features of the induction program and discuss needed revisions or additions to the developed resources. I understand that my time commitment for reviewing the program and participating in the panel will be approximately 8-10 hours, and that I will be compensated $1500 for my contributions to the group.

I am looking forward to working with you and the other members of the advisory board to develop an induction program that will support novice teachers of students with autism working in high-minority schools. I wish you success with this proposal!

Sincerely,

Melinda Shorday

Melinda Shorday, M.Ed.
Director Specialized Services
Mastery Charter Schools
Melinda.shorday@masterycharter.org

Carbon Lehigh Intermediate Unit #21

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Elaine E. Eib, Ed.D.
Executive Director

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August 7, 2020

Kristi Morin, Ph.D., BCBA-D
College of Education, Lehigh University
111 Research Drive, Bethlehem, PA 18015

Dear Dr. Morin,

Thank you for the invitation to serve on your advisory board related to developing an induction program for novice teachers of students with autism working in high-poverty schools. I am excited to hear about the proposed work of *Project STAY (Supporting Teachers of Autism in Years 1-3)*, and I am happy to lend my expertise to your team. Nationwide, there is a tremendous need to support novice teachers to promote retention, especially among novice teachers of students with autism working in high-minority schools where attrition is especially high. Your project meets this need through an induction program that is specially designed to meet the unique needs of this population. I am enthusiastic about the opportunity to provide insight related to your induction program and associated resources.

I have been working in the field of education for 17 years. For the first 10 years, I was both a teacher and special education facilitator for the Allentown School District. As a facilitator, I supported novice teachers in a variety of special education settings, including Autistic Support. For the last 7 years, I have been a special education supervisor for Carbon Lehigh Intermediate Unit #21. In this role, I have supervised a variety a of programs, which included but were not limited to a center for students with emotional and mental health needs, school based Autistic support programs, and Preschool Early Intervention Services. As supervisor for the CLIU#21 I have ensured the successful induction of many novice teachers. With this organization, I have also been an activity member of several different committees that developed, planned, and implemented induction programs for novice teachers.

If funded, I will review the developed induction program manual and resources during Year 2 of the project (2022-2023) and provide feedback during a remote session with the advisory panel. I understand that during this session, the other panel members and I will work toward consensus on the most important and feasible features of the induction program and discuss needed revisions or additions to the developed resources. I understand that my time commitment for reviewing the program and participating in the panel will be approximately 8-10 hours, and that I will be compensated $1500 for my contributions to the group.

I am looking forward to working with you and the other members of the advisory board to develop an induction program that will support novice teachers of students with autism working in high-minority schools. I wish you success with this proposal!

Sincerely,

Matthew Martucci

Matthew Martucci, MS Ed
Special Education Supervisor, Early Intervention
Carbon Lehigh Intermediate Unit #21
martuccim@cliu.org

MID VALLEY
SCHOOL DISTRICT
50 Underwood Road
Throop, Pa 18512
p 570.307.1150 | f 570.307.3239

Brian Kelly | Elementary Center Principal
Michael Piercy | Elementary Center Vice Principal

August 7, 2020

Kristi Morin, Ph.D., BCBA-D
College of Education, Lehigh University
111 Research Drive, Bethlehem, PA 18015

Dear Dr. Morin,

Thank you for the invitation to serve on your advisory board related to developing an induction program for novice teachers of students with autism working in high-poverty schools. I am excited to hear about the proposed work of *Project STAY (Supporting Teachers of Autism in Years 1-3)*, and I am happy to lend my expertise to your team. Nationwide, there is a tremendous need to support novice teachers to promote retention, especially among novice teachers of students with autism working in high-minority schools where attrition is especially high. Your project meets this need through an induction program that is specially designed to meet the unique needs of this population. I am enthusiastic about the opportunity to provide insight related to your induction program and associated resources.

Over the past eight years as an elementary principal in Pennsylvania, hiring practices and procedures, new teacher induction programs, and retaining teachers were common focus areas of mine. I have worked in diverse schools throughout the state including rural and suburban areas with high percentages of poverty (50% up to 65% poverty). Throughout my time as an educational leader, I also have spent a great deal of time working with special education students. Specifically, I collaborated with special education directors and teachers on advocating for equity and inclusion for students across the special education continuum.

If funded, I will review the developed induction program manual and resources during Year 2 of the project (2022-2023) and provide feedback during a remote session with the advisory panel. I understand that during this session, the other panel members and I will work toward consensus on the most important and feasible features of the induction program and discuss needed revisions or additions to the developed resources. I understand that my time commitment for reviewing the program and participating in the panel will be approximately 8-10 hours, and that I will be compensated $1500 for my contributions to the group.

I am looking forward to working with you and the other members of the advisory board to develop an induction program that will support novice teachers of students with autism working in high-minority schools. I wish you success with this proposal!

Sincerely,

Brian Kelly
Principal
Mid Valley Elementary Center
kellyb@mvsd.us

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of NORTH CAROLINA
at CHAPEL HILL

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August 11, 2020

Kristi Morin, Ph.D.,
College of Education
Lehigh University
111 Research Drive
Bethlehem, PA 18015

Dear Kristi,

I am writing to express my support for *Project STAY: Supporting Teachers of Autism in Years 1-3,* an IES Early Career Development and Mentoring (CFDA 84.324B) project. I agree to serve as an advisory board member during Year 2 and as a consultant during Year 4, should it be funded. Having worked closely with you as your supervisor during your postdoctoral position, I look forward to the opportunity to support you in developing an induction program for novice teachers of students with autism in high-minority settings.

As you know, I have extensive experience with evidence-based practices for students with autism and with developing professional development programs for teachers of students with autism. I am the Principal Investigator for the National Professional Development Center on Autism Spectrum Disorders (NPDC), and I recently co-led the National Clearinghouse on Autism Evidence and Practice's updated review of evidence-based practices for students with autism. In addition, I am a previous member of the National Academy of Science Committee on Educating Children with Autism, which published a report on effective educational programs for young children with ASD, and I was a member of the committee that developed the 10 Year Roadmap for Autism Research coordinated by the National Institute on Mental Health and the Interagency Autism Coordinating Committee. Finally, I have been Principal Investigator on a number of externally funded projects that focused on improving outcomes for students with ASD, including *The Efficacy Study for Elementary Learners with Autism Spectrum Disorder (TESELA)*, an IES Initial Efficacy project where our team tested a model of professional development that we developed to improve elementary teachers' implementation of evidence-based practices for students with autism. Should *STAY* be funded, I look forward to using my expertise with improving the instructional skills of teachers of students with autism to help you refine your induction program.

In addition to my experience with teacher development and evidence-based practices for students with autism, I also have experience conducting cost analyses. Initially, the

Center for Special Education Finance collaborate with our research group to develop a cost ingredients plan that we used to analyze cost of different inclusion models (Odom, Hanson et al., 2001; Odom, Parish, et al., 2001). We have since adapted that process to analyze cost in three IES funded RCTs. I am happy to share my knowledge of cost analyses to help you develop a cost analysis for the pilot study in Year 4.

As an advisory board member, I agree to review the developed induction program manual and resources during Year 2 of the project (2022-2023) and provide feedback during a remote session with the advisory panel. I understand that during this session, the other panel members and I will work toward consensus on the most important and feasible features of the induction program and discuss needed revisions or additions to the developed resources. I understand that my time commitment for reviewing the program and participating in the panel will be approximately 8-10 hours, and that I will be compensated $1,500 for my contributions to the group. As a consultant, I agree to support you in developing a cost analysis for the pilot study in Year 4. I understand that my time commitment for consultation will be approximately 4-6 hours and that I will be compensated $1,000 for my time.

Sincerely,

Samuel L. Odom, Ph.D.
Senior Research Scientist
Frank Porter Graham Child Development Institute
University of North Carolina at Chapel Hill

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FRANK PORTER GRAHAM CHILD DEVELOPMENT INSTITUTE

Sheryl-Mar North Building | Campus Box 8040
517 South Greensboro Street | Chapel Hill, NC 27599-8040
fpg.unc.edu

August 11, 2020

Dear Kristi,

I am writing to enthusiastically express my support for *Project STAY: Supporting Teachers of Autism in Years 1-3*. I agree to serve as a consultant during Years 2-3 of this IES Early Career Development and Mentoring (CFDA 84.324B) project, should it be funded. Having worked closely with you during your postdoctoral position on multiple IES funded projects and the development of the Autism Focused Intervention Resources and Modules (AFIRM), I look forward to the opportunity to work with you on this project to help you develop an induction program for use by novice teachers of students with autism working in high-minority schools.

As a consultant, I agree to engage in the activities stipulated in the proposal. Specifically, I will support you in the development and revision of online modules and web-based trainings for mentors and novice teachers in the STAY induction program during Years 2-3. My experience with online modules and trainings include serving as Co-Principal Investigator for a funded IES Development and Innovation project, *Project STELA* (Odom, Cox, & Sam, 2017-2020), where I led the development and revision of online modules designed to increase paraprofessionals' abilities to deliver evidence-based practices for students with autism. In addition, I led the development of the AFIRM modules, including authoring 15 modules and supervising the development of an additional 12 modules. Through my work on these projects, I have solicited feedback from countless school-based professionals on the feasibility and acceptability of online modules and integrated this feedback into the development and revision of online modules and trainings. As a consultant on this project, I will use my background and experience to support you in developing online trainings for mentor and novice teachers that are acceptable and feasible.

I understand that I will contribute approximately 16 hours to *Project STAY* in Year 2 for initial development and approximately 8 hours in Year 3 for revision based on stakeholder feedback. I also understand that I will be compensated a total of $4,500 for my work on this project. Thank you for the opportunity to partner with you on this important line of work. I look forward to working with you should the grant be funded. Best wishes on the proposal!

Sincerely,

Ann Sam

Ann Sam, Ph.D.
Advanced Research Scientist
Frank Porter Graham Child Development Institute
University of North Carolina at Chapel Hill
ann.sam@unc.edu
919-966-7186

LEHIGH UNIVERSITY

Department of Education and Human Services
College of Education
Mountaintop Campus, Iacocca Hall
111 Research Drive, Bethlehem, PA 18015-4794
Office: (610) 758-3241 **Fax:** (610) 758-6223
http://ed.lehigh.edu/

August 3, 2020

Dear Kristi,

I am writing to express my enthusiastic support for you to audit my course, *Qualitative Research Methods*, offered within the College of Education at Lehigh University. I understand that you will be auditing this course during Spring 2021 as part of your research and career development plans for *Project STAY: Supporting Teachers of Autism in Years 1-3,* an IES Early Career Development and Mentoring (CFDA 84.324B) project, should it be funded.

This course builds knowledge in qualitative research and focuses on how to identify and conduct rigorous qualitative research that conforms to quality standards. In the course, I especially focus on developing research skills in interviewing and systematic observation by teaching how to (a) construct interview protocols, (b) expand observation jottings into detailed fieldnotes, (c) systematically triangulate and analyze data from interviews and observations, and (d) write qualitative research reports. Given that you will be conducting teacher interviews and classroom observations as part of *Project STAY*, I believe this course will be particularly relevant to your needs.

I am always happy to share my knowledge of qualitative research with others, and I welcome the opportunity to have you join my class. Best wishes on your grant!

Sincerely,

Sara E.N. Kangas

Sara E.N. Kangas, Ph.D.
Assistant Professor of Special Education
College of Education, Lehigh University
sak516@lehigh.edu
610-758-3235

LEHIGH UNIVERSITY

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http://ed.lehigh.edu/

July 31, 2020

Dear Kristi,

I am writing to express my support for *Project STAY: Supporting Teachers of Autism in Years 1-3.* As a previous superintendent, I am familiar with the detrimental effects of attrition to both teachers and students, and I recognize the critical need to develop an induction program for novice teachers of students with autism working in high-minority schools. Therefore, I am happy to support you in carrying out this important and valuable line of work.

Specifically, I will reserve time during the Lehigh University School Study Council meetings (LUSSC) for you to provide educational leaders in our state with (a) information about your project for recruitment purposes and (b) annual updates on your project's progress. As the Executive Director of LUSSC, I approve the agenda and content of all meetings and have positive working relationships with all of our members.

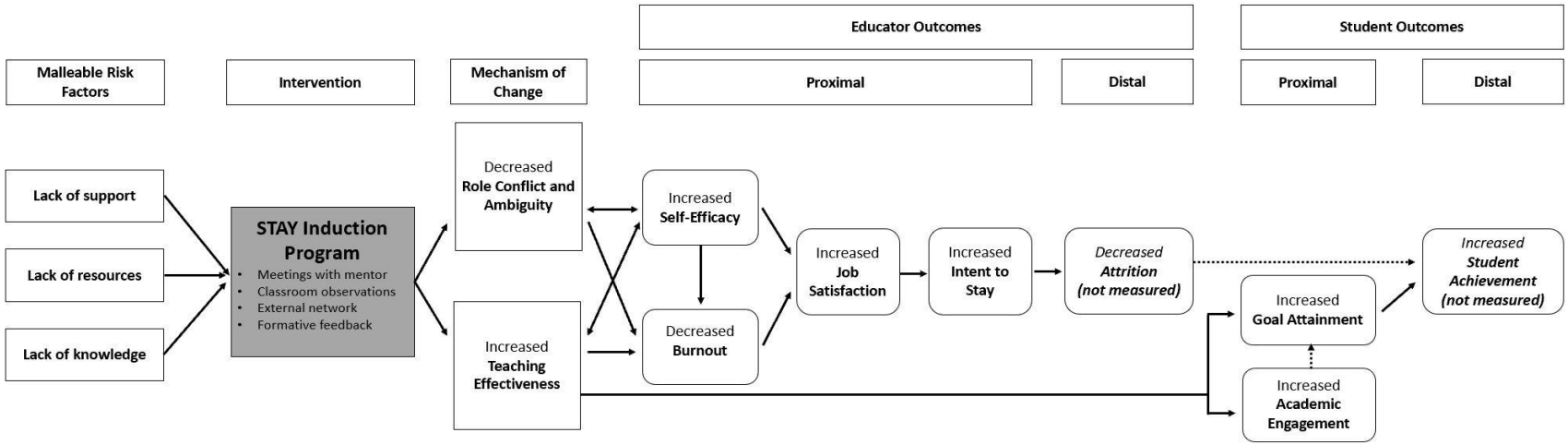
I understand that this is a four year project and that you will be recruiting participants each year across three different research phases, should the project be funded. I also understand that you would be providing annual updates in Years 2-4. Many of our members lead high-poverty schools; thus, this project is especially relevant to their work and I welcome the opportunity for you to share information about *Project STAY* during our meetings. Good luck on the grant!

Sincerely,

(verbal consent)

Brian Osborne, Ed.D.
LSUCC Executive Director
Professor of Practice, Educational Leadership
Lehigh University
bgo219@lehigh.edu
610-758-6838

F1. Theory of Change



F2. Timeline of Research and Career Development Activities

	Year 1 July 2021-June 2022				**Year 2** July 2022-June 2023				**Year 3** July 2023-June 2024				**Year 4** July 2024-June 2025			
Quarter	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
PROJECT MANAGEMENT AND ONGOING CAREER DEVELOPMENT																
Recruit and hire research assistants	R															
Obtain IRB approval/ongoing modifications	R				R				R				R			
Submit annual IES Reports					R				R				R			
Attend LU School Study Council	CD1	CD1	CD1	CD1	CD1	CD1	CD1	CD1	CD1	CD1	CD1	CD1	CD1	CD1	CD1	CD1
MEETINGS WITH MENTORS AND CONSULTANTS																
Dr. Kern Meetings (Primary Mentor)	CD1	CD1	CD3	CD3	CD1	CD1	CD3	CD3	CD1	CD1	CD3	CD3	CD1	CD1	CD3	CD3
Dr. Leko Meetings (Mixed Methods Mentor)	CD2	CD2	CD2	CD2	CD2	CD2	CD2	CD2	CD2	CD2	CD2	CD2	CD2	CD2	CD2	CD2
Dr. Spybrook Meetings (Group Design Mentor)	CD2											CD2	CD2	CD2	CD2	CD2
Dr. Odom Meetings (Consultant)													CD3	CD3	CD3	CD3
Dr. Sam Meetings (Consultant)					R	R			R	R						
PHASE 1: INITIAL DEVELOPMENT																
Trainings and Preliminary Activities																
Attend Qualitative Research Summer Intensive	CD2															
Attend University of Michigan's Mixed Methods Research Workshop		CD2														
Audit course on qualitative research		CD2	CD2													
Update literature review	R															
Develop recruitment materials for school districts	R															
Classroom Observations																
Identify and consent participants for classroom observations	R															
Revise classroom observation protocols	R	R														
Conduct classroom observations		R	R													
Analyze data from classroom observations			R	R												
Focus Groups																
Identify and consent participants for focus groups			R													
Establish focus group dates			R													

Revise protocol for focus groups			R													
Conduct focus groups			R	R												
Transcribe & analyze focus group data				R	R											
Develop Induction Manual and Resources																
Develop first draft of the STAY induction program manual and associated resources					R											
Advisory Group																
Establish advisory board dates						R										
Send manual and resources to advisory board members to review						R										
Conduct advisory board remote sessions							R									
Analyze advisory board data							R									
Revise Resources																
Revise STAY induction program resources							R	R								
PHASE 2: DESIGN BASED RESEARCH AND ITERATIVE MODEL DEVELOPMENT																
Attend CLASS training									R							
Recruit Phase 2 schools									R							
Consent teacher, mentor, and student participants									R							
Complete pre-intervention measures									R							
Conduct trainings for teachers and mentors										R						
Implement STAY and collect data										R	R	R				
Revise interview protocol										R						
Administer STAY Implementation Index (SII) and Mentor Competency Assessment (MCA)										R	R	R				
Analyze data from SII and MCA										R	R	R				
Conduct interviews										R	R	R				
Administer post-intervention measures												R				
Analyze interview and outcome data												R				
Revise STAY induction program based on data												R				
PHASE 3: PILOT EFFICACY STUDY																
Refine design and develop data analysis plan													R			
Train blind research staff for fidelity, DBR, & GAS coding													R			
Research staff attends CLASS Training													R			
Recruit Phase 3 schools													R			

Consent teacher, mentor, and student participants													R			
Complete pre-intervention measures													R			
Conduct trainings for teachers and mentors														R		
Implement STAY and collect data														R	R	R
Administer STAY Implementation Index														R	R	R
Administer post-intervention measures																R
Analyze data from outcome measures																R
COST ANALYSIS, DISSEMINATION OF FINDINGS, AND PREPARATION OF INITIAL EFFICACY PROPOSAL																
Cost Analysis																
Attend IES Methods Training in Cost Effectiveness and Economic Evaluation												CD3				
Develop cost analysis plan													R	R	R	R
Presentation of Findings																
Disseminate results at state/national conferences (see Appendix A: Dissemination Plan)					R	R	R	R	R	R	R	R	R	R	R	R
Publications																
Prepare & submit peer-reviewed manuscripts				R	R			R	R			R	R			R
Publish Research Snapshot to website and send to Intermediate Units								R				R				R
Post project-related information to website, social media, and LU listservs				R				R				R				R
IES Initial Efficacy Proposal																
Attend IES grant writing webinars												CD3				CD3
Prepare IES Initial Efficacy proposal with mentoring from Dr. Kern												R	R	R	R	R

Note. CD1 = timing of career development for Career Goal 1 (increase capacity to conduct school-based research); CD2 = timing of career development for Career Goal 2 (develop expertise in mixed methods and group design research); CD3 = timing of career development for Career Goal 3 (enhance my skills in grant writing and publication); R = timing of research activities

Appendix F3. Sample Classroom Observation Protocol

During Phase 1, I will conduct classroom observations to understand in which areas novice teachers of students with ASD in high-minority schools need the most support. The following protocol was developed based on EBPs for students with ASD, identified in a technical report that I co-authored with members of the National Clearinghouse on Autism Evidence and Practice (NCAEP; Steinbrenner et al., 2020). *Please note that the protocol may be revised based on feedback from my mixed methods mentor, Dr. Melinda Leko.*

BEHAVIOR MANAGEMENT	Often	Sometimes	Never
1. Sets clear expectations for student behavior			
2. Delivers behavior specific praise			
3. Uses reinforcement systems (e.g., token economies, first → then boards, etc.)			
4. Provides students with choices (e.g., where to sit, order of assignments, writing utensils, etc.)			
5. Uses function-based interventions for problem behaviors (e.g., FCT, extinction, etc.)			
Notes:			

CLASSROOM PRACTICES	Often	Sometimes	Never
1. Provides students with a variety of opportunities to respond			
2. Uses appropriate wait time (i.e., progressive or constant)			
3. Uses appropriate prompting techniques (i.e., most to least or least to most)			
4. Models appropriate responses			
Notes:			

EVIDENCE-BASED PRACTICES FOR ASD	Often	Sometimes	Never
1. Uses visual supports			
2. Uses task analyses for multi-step skills			
3. Uses visual schedules			
4. Uses communication devices (if needed)			
Notes:			

DATA COLLECTION	Often	Sometimes	Never
1. Collects data on student behavior			
2. Uses appropriate data collection methods			
3. Links data collection to IEP goals			
Notes:			

CLASSROOM ENVIRONMENT	Often	Sometimes	Never
1. Has a positive rapport with students			
2. Classroom climate is warm and welcoming			
3. Demonstrates respect for students			
Notes:			

OBSERVATIONAL NOTES
Effective teaching practices observed:
Ineffective teaching practices observed:
Additional notes:

Appendix F4. Sample Focus Group Protocol for School/District Administrators and District Level Specialists (Year 1)

Focus groups will be conducted with four stakeholder groups to gather their perspectives and experiences with induction programs. This protocol reflects potential questions for school/district administrators and district level specialists. The protocol for novice and experienced teachers of students with ASD will follow a similar format with slightly revised wording (e.g., For novice teachers, the second section will read Part II: Current Experiences and will ask about what induction supports the novice teacher is currently receiving and what their perceptions are regarding the effectiveness of these supports; for experienced teachers, this section will read Part II: Past Experiences and will ask about what induction supports were available when they were a novice teacher and what supports or information they wished were available).

Part I. Introductions

Let's start by talking a little bit about your current role and experience with induction.

Prompt: *Tell me about your current role*. After everyone has shared:

Probes:

1. *How long have you been in your current role?*
2. *What are your job responsibilities?*

Prompt: *Tell me about your experience with induction programs.* After everyone has shared:

Probes:

1. *What is your experience with induction programs for novice special education teachers, particularly teachers of students with autism?*

Member Check: Summarize participants' comments and ask if the summary accurately portrays their thoughts on the topic. Ask if there is anything that the moderator missed and whether anyone would like to add any additional comments.
Note: Member check will be repeated at the conclusion of every section.

Part II. Current Practice

Let's talk about what induction programs currently look like in your school or district.

Prompt: *What induction supports are currently offered in your school or district?* After everyone has shared:

Probes:

1. *How is induction different for special education teachers, specifically teachers of students with ASD?*
2. *What resources are available to support the implementation of induction programs?*
3. *How is fidelity of implementation assessed?*
4. *How is the overall effectiveness of the induction program assessed?*

Prompt: *What is your impression of the effectiveness of the current induction supports that are available?* After everyone has shared:

Probes:

1. *How can the current induction program be improved?*
2. *What aspects of the current program are effective/not effective?*
3. *What components could be added or strengthened to improve the current program?*

Part III. Challenges Specific to High-Minority Districts

Let's talk about the barriers to implementing an induction program.

Prompt: *What barriers or challenges are associated with implementing an induction program in your school or district?* After everyone has shared:

Probe:

1. *What challenges are specific to implementing an induction program with novice teachers of students with ASD?*

Part III. Ideal Induction Program

Let's talk about what an ideal induction program would look like.

Prompt: *Describe what an ideal induction program for novice teachers of students with ASD would look like in your school or district* After everyone has shared:

Probes:

1. *What components should be included in an induction program for novice teachers of students with ASD in your school or district?*
2. *What is the ideal timing/frequency of these components (e.g., how often should mentors meet with their mentees, how frequently should professional development occur, etc.)?*
3. *What barriers might prevent, or make it challenging, to implement the components of your ideal induction program in your school or district?*
4. *How might these barriers or challenges be overcome?*

Part IV: Feasibility of STAY Components

Let's talk about the feasibility and acceptability of different components typically included in induction programs. Note: In this section, I will ask about the five components of STAY to gather information on the feasibility and acceptability of these components. Only Component 1 is included in this sample protocol; however, the full protocol will include similar questions about each component.

Prompt: *What are your thoughts on including mentor support as part of an induction program?* After everyone has shared:

Probes:

1. *What challenges or barriers might make it difficult to include mentor support as part of an induction program in your school district?*
2. *How frequently should mentors meet with the novice teacher?*

Part V: Conclusion

What final comments or suggestions do you have to help me develop an induction program for use by novice teachers of students with ASD in your school or district?

Appendix F5. Sample STAY Implementation Index

Research staff will complete the STAY Implementation Index at three time points (i.e., November, February, May) to assess fidelity of implementation. *Please note that the content of the index may change based on feedback from stakeholders and advisory board members during the development period.*

Component	Items	Rating		
		Incomplete (1)	**Partially Complete (2)**	**Complete (3)**
Mentor Support	Mentor conducts weekly check-in via distance technology three times per month	<3 distance check-ins/ month	3 distance check-ins/month (not conducted weekly)	3 distance check-ins/month conducted weekly
	Mentor conducts weekly check-in via in-person meeting once per month	No additional weekly check-in	1 additional weekly-check in via distance /month	1 weekly-check in via in-person/ month
	Mentor achieves an average of 90% or higher on mentor session fidelity checklist across all weekly check-ins	<75% on checklist	75%-89% on checklist	90% or higher on checklist
Initial and Ongoing Training	Mentor and novice teacher participate in initial training	Neither teacher participates	One teacher participates	Both teachers participate
	Mentor completes four online modules within the first two months of beginning intervention (i.e., one every two weeks)	Less than 4 modules completed	All 4 modules completed after 2 month period	All 4 modules completed within first 2 months
	Mentor scores at least 90% on the post-test for all four online modules	90% or higher for <3 modules	90% or higher for 3/4 modules	90% or higher on for all modules
Observation of Exemplary Teaching	Novice teacher observes mentor a total of four times (once per month for first four months)	Observes 0-2 times over 4 months	Observes 1x/ month for 3 months	Observes 1x/ month for 4 months
	Novice teacher observes four exemplary teachers (one per month for last four months)	Observes 0-2 times over 4 months	Observes 1x/ month for 3 months	Observes 1x/ month for 4 months
	Novice teacher completes classroom observation protocol for each observation (n=8)	0-4 protocols complete	5-7 protocols complete	8 protocols complete
	Novice teacher meets with mentor within 48 hours of the observation	Meets within 48 hours for 0-4 observations	Meets within 48 hours for 5-7 observations	Meets within 48 hours for all 8 observations
	Novice teacher follows debriefing protocol for all 8 observations (i.e., notes things that went well, asks questions or seeks clarification on topics of confusion or dissonance)	Follows debriefing protocols for 0-4 observations	Follows debriefing protocol for 5-7 observations	Follows debriefing protocol for 8 observations

Adapted from IES R324A150047 (TESELA: The Efficacy Study for Elementary Learners with Autism Spectrum Disorder)

Formative Assessment of Teaching Practice	Mentor observes novice teacher in-person once per month (n=8)	Observes in-person for 0-4 months or less than 1x/month	Observes in-person 1x/month for 5-7 months	Observes in-person 1x/month for 8 months
	Mentor observes novice teacher via 20-minute recorded video once per month (n=8)	Observes video for 0-4 months or less than 1x/month	Observes video 1x/month for 5-7 months	Observes video 1x/month for 8 months
	Mentor meets with novice teacher within 48 hours of all in-person and video observations (n=16)	Meets within 48 hours for 0-8 observations	Meets within 48 hours for 9-15 observations	Meets within 48 hours for all 16 observations
	Mentor teacher achieves at least 90% fidelity on the constructive feedback checklist	<75% on checklist	75%-89% on checklist	90% or higher on checklist
Participation in a Network	Novice teacher contributes to the online network at least once per week for 32 weeks	Contributes at least 1x/week for <16 weeks	Contributes at least 1x/week for 16-31 weeks	Contributes at least 1x/week for 32 weeks
	Novice teacher responds to a minimum of two contributions from other members per week for 32 weeks	Responds to a minimum of 2 contributions for <16 weeks	Responds to a minimum of 2 contributions for 16-31 weeks	Responds to a minimum of 2 contributions for 32 weeks
	Novice teacher follows all *Guidelines for Participation* for at least 90% of contributions	Follows guidelines for <75% of contributions	Follows guidelines for 75%-89% of contributions	Follows guidelines for 90% of contributions

Adapted from IES R324A150047 (TESELA: The Efficacy Study for Elementary Learners with Autism Spectrum Disorder)

Appendix F6. Goal Attainment Scale (GAS) Sample

The GAS is used as an outcome measure for students with ASD in this study. Prior to intervention, I will work with teachers to scale an academic goal and RAs will observe students to confirm that they are performing at a level 0.

PRESENT LEVEL OF PERFORMANCE (BASELINE)	0	Level of current performance for the target behavior. Based on data and includes prompting strategies, settings, persons, materials, etc.
INITIAL OBJECTIVE	1	Determine initial objective based on the present level of performance and the annual goal.
SECONDARY OBJECTIVE	2	Determine secondary objective based on initial objective and annual goal.
ANNUAL GOAL	3	Based on the present level of performance, develop a measurable and observable annual goal (includes antecedent, behavior, and criteria).
EXCEEDS ANNUAL GOAL	4	Determine exceeds annual goal based on annual goal.

Appendix F7. Sample Interview Protocol for Mentor Teachers (Year 3)

Interviews will be conducted with participating mentor and novice teachers in Phase 2 (Year 3) to gather their perspectives on the feasibility and acceptability of the STAY induction program. This sample protocol reflects potential questions for the mentor teachers. A similar format will be used with novice teachers with minor revisions (e.g., Part I General Experience will be revised to ask about the participant's experience being a mentee; Part II Training will be replaced with a section examining perspectives on participation in external networks). All interviews will be semi-structured, meaning that questions will be asked naturally in the course of conversation and probing questions (e.g., *Can you tell me more about that?*) will be used to delve more deeply into participants' perspectives and experiences.

Part I. General Experience

Let's start by talking about your experience being a mentor.

Prompt: *Tell me about your experience being a mentor this past year.*

Probes:

1. *What went well?*
2. *What challenges did you experience?*
3. *How effective do you feel the mentoring process was overall?*

Member Check: Summarize the participant's comments and ask if the summary accurately portrays the participant's thoughts on the topic. Ask if there is anything that the moderator missed and whether the participant would like to add any additional comments.
Note: Member check will be repeated at the conclusion of every section.

Part II. Training

Let's talk about your thoughts regarding the training in which you participated.

Prompt: *Describe your experience with the initial and ongoing trainings.*

Probes:

1. *How could the trainings be improved?*
2. *What aspects of the trainings would you keep?*
3. *What changes would you make in the timing of the trainings?*
4. *What changes would you make in the order the topics were covered in the training?*
5. *What topics did you feel were unnecessary?*
6. *What topics or information do you feel were missing?*

Part III. Mentor Meetings

Let's talk about your experience with mentor meetings.

Prompt: *Tell me about your experience with the weekly meetings with your mentee.*

Probes:

1. *What went well?*
2. *What was challenging?*
3. *Discuss the feasibility of the number of mentor meetings.*

4. *Did you feel this was an effective component of the program? Why or why not?*
5. *What changes could I make to strengthen this component of the program?*

Part IV. Classroom Observations

Let's talk about your experience with classroom observations.

Prompt: *Tell me about your experience conducting classroom observations of your mentee.*

Probes:

1. *What went well?*
2. *What was challenging?*
3. *Discuss the feasibility of the number classroom observations.*
4. *Did you feel this was an effective component of the program? Why or why not?*
5. *What changes could I make to strengthen this component of the program?*

Prompt: *Tell me about your experience being observed by your mentee.*

Probes:

1. *What went well?*
2. *What was challenging?*
3. *Discuss the feasibility of the number classroom observations.*
4. *Did you feel this was an effective component of the program? Why or why not?*
5. *What changes could I make to strengthen this component of the program?*

Part V. Needed Revisions

Let's talk about needed changes to the STAY induction program.

Prompt: *What resources or supports could I add to develop mentors' skills?*

Prompt: *What changes would you suggest to strengthen or improve the STAY induction program overall?*

Probes:

1. *What resources or supports should be added to the STAY induction program?*
2. *Which components of the STAY induction program were unnecessary or burdensome?*
3. *Which components of the STAY induction program would you keep the same?*

Part V: Conclusion

What else would you like to tell me about your experience being a mentor or the induction program overall? What final comments or suggestions do you have to help me improve the STAY induction program?

Appendix F8. Sample Mentor Session Fidelity Checklist

School: _____ Mentor: _____ Novice Teacher: _____

Date: _____ Time: _____ Observer: _____

Directions: Observe the weekly check-in session between the mentor and novice teacher and mark "+" if the mentor performed the step and "-" if the mentor did not perform the step.

Steps	**+/-**
Asks novice teacher what successes s/he experienced the previous week	
Asks novice teacher what challenges s/he experienced the previous week	
Helps novice teacher problem solve challenges by offering appropriate solutions to challenges experienced	
Reviews the previous week's teaching video with the novice teacher (if applicable) and provides feedback using the *Mentor Feedback Checklist*	
Assesses progress towards scaled professional goals by reviewing professional goals document with the novice teacher	
If the novice teacher made progress towards goal: • Delivers behavior specific praise If the novice teacher did not make progress towards goal: • Asks probing questions to determine reasons why progress was not made • Offers suggestions for how the novice teacher can make progress over the next week	
Listens without interrupting for the entire session	
Offers at least one encouraging and empathetic response	
Sets one short-term objective for the following week related to a professional goal	
Asks the novice teacher if s/he has any questions or additional topics to discuss	
Develops a plan to help the novice teacher secure any needed resources	
Schedules the following week's meeting	

Appendix F9. GAS Inter-Rater Reliability Scoring Criteria

Psychometric Equivalence Tested Goal Attainment Scale
GAS Coding Instructions

Instructions: A 3-point Likert Scale is applied for each of the three dimensions described. Each scale has its own anchors.

Level of Difficulty

1	2	3
Not at all Difficult	Somewhat Difficult	Very Difficult

Compare Present Level of Performance to Annual Goal to determine Difficulty

1. The skill is very close to what the child is already described as able to perform in the present levels of performance.
2. The present levels of performance indicate that the child is able to perform the skill in limited ways compared to what is written in the objective (limited people, prompts, or places); if present level says child has difficulty doing it, score a "2".
3. The present levels of performance indicate that the child is unable to perform skill with anyone, anywhere, or with any prompts compared to what is written in the objective.

Measurability

1	2	3
Not at all Measurable	Somewhat Measurable	Very Measurable

Only look at the Annual Goal to score Measurability

1. None or only one indicator (prompt level*, criterion for success**; observable skill) is listed.
2. Two of the three indicators (prompt level*, criterion for success**; observable skill) are provided.
3. Describes all three indicators (prompt level*, criterion for success**; observable skill).

*prompt level refers to specific type of prompt (gestural, verbal, model, etc.), cannot simply say "prompt" and should include number of prompts
**criterion should include things like numbers of questions, not simply 80% of questions

Equidistance

1	2	3
Not at all Equal	Somewhat Equal	Very Equal

Look at all four levels of a GAS goal for Equidistance

1. Across 2 GAS levels (-2, -1, 1, 2) the skill frequency increases or reduces in roughly equal amounts (e.g., moving from 3 to 6 to 9 occurrences for -2, 0, 2) **and/or** none or only 1 of the four GAS levels (-2, -1, 1, 2) include reference to the appropriate prompt hierarchy (moving from physical to independent/visual support and/or number of specified prompts).
2. Across 3 or more GAS levels the skill frequency increases or reduces by equal amounts **and/or** two out of the four GAS levels (-2, -1, 1, 2) include reference to the appropriate prompt hierarchy (moving from physical to independent/visual support **and** number of specified prompts).
3. Across 3 or more of the GAS levels the frequency of skill increases or reduces by equal amounts for the majority **AND** at least three of the four GAS levels (-2, -1, 1, 2) include in reference to the appropriate prompt hierarchy (moving from physical to independent/visual support **and** number of specified prompts).