Postsecondary Training and Performance Feedback: Effect on Peer Mentor Fidelity and Behavior of a Student with Multiple Disabilities

Kirsten R. Lansey, Ph.D.
Department of Special Education
The University of Utah

Shirin D. Antia, Ph.D.
Stephanie Z.C. MacFarland, Ph.D.
Chelsea E. Carr, Ph.D., BCBA-D
Department of Disability and Psychoeducational Studies
The University of Arizona

Abstract

Postsecondary education students with intellectual and multiple disabilities are often supported by same-aged peer mentors. A single-subject multiple baseline design was used to examine the relationship between training with and without performance feedback and a peer mentor's fidelity of implementing a student's function-based intervention plan across settings. Further, the relationship between peer mentor fidelity and a student's on-task behavior was explored. The peer mentor's fidelity immediately improved in all settings after being trained but required performance feedback to improve further. There was a functional relation between the peer mentor's fidelity and the student's behavior in two of the three settings.

Keywords: postsecondary education, peer mentor, performance feedback, fidelity, behavior

Plain Language Summary

- Juliana, a college student with multiple disabilities, was struggling to stay on-task while in a computer lab, class, and transitioning to work. Juliana was supported by a peer mentor named Erin.
- **What we did in this study:** I created a behavior plan for Juliana and then met with Erin to teach her how to follow the plan to support Juliana to stay on-task.
- I met with Erin three more times to teach her how to support Juliana during the three activities, each time explaining what she did well and what she needed to do better.
- I asked the following questions:
    - (1) How much training Erin needed to support Juliana to stay on-task during all three activities.
    - (2) If teaching Erin how to support Juliana during one activity would improve Erin's support during other activities.

    - (3) If Juliana would be on-task more as Erin's support improved.
- **Results:** After first teaching Erin, her support improved during all activities.
- After teaching Erin how to support Juliana during a specific activity, Erin's support further improved in that same activity.
- Erin's support improved in the computer lab and transitioning to work more than in class. Erin's support improved during the transition to internship after being taught how to support in the computer lab and class.
- **Conclusion:** As Erin's support improved, so did Juliana's on-task behavior in the computer lab and class, but not as much during her transition to work.

After completing high school, most students with intellectual disabilities (ID) are unemployed or isolated in vocational workshops and do not attend postsecondary education (PSE; Avellone et al., 2021). Grigal and Papay (2018) argue that inequity in educational and employment outcomes is a result of the scarce opportunities for students with ID to attend college or obtain meaningful competitive employment. The Higher Education Opportunity Act of 2008 (P.L. 110-315) ignited the development of inclusive PSE programs that made higher education accessible for students with ID in over 300 college and university programs across the United States. Inclusive PSE is an opportunity for students with intellectual and developmental disabilities (IDD) to improve their educational and employment outcomes. Students with IDD can attain academic and social success in higher education when provided with appropriate supports and high expectations (Uditsky & Hughson, 2012). Further, participation in PSE leads to improved long-term outcomes, such as obtaining competitive employment and increasing self-determination (Avellone et al., 2021; Moore & Schelling, 2018; Smith et al., 2018).

Appropriate support for students with IDD during college includes both individualized and natural supports. Individualized and natural supports improve student access and opportunities to learn (Taub et al., 2017) within inclusive PSE. Accreditation standards for PSE programs highly recommend the use of peer support (National Coordinating Center, 2016) as natural supports. Fellow college students serving as peer mentors are frequently used as natural supports for students with IDD in inclusive PSE programs. Peer mentors are typically undergraduate students from various academic disciplines and levels of experience (Carter et al., 2019). They support students with IDD to participate in academic classes and complete assignments, socialize with their peers, navigate the campus, and develop work skills (Kleinert et al., 2012). With effective training, peer mentors can also support PSE students who demonstrate challenging or inappropriate behavior to learn skills that in turn improve their opportunities to learn (i.e., social, communication, academic; Lansey et al., 2021).

Carter and McCabe (2021) conducted a systematic review of 37 studies that explored the perspectives of approximately 2,670 peer mentors who supported students with IDD in inclusive college programs. Peer mentors in four studies mentioned challenging behavior

of certain students, and some peers reported having to redirect students to more appropriate behaviors. Peer mentors reported needing more thorough and ongoing training, particularly to support students with IDD to learn social skills and appropriate behavior. Carter and McCabe emphasize the importance of initial training and ongoing support from PSE staff to ensure that peers appropriately support students who demonstrate challenging behavior (2021).

Performance feedback is an evidence-based practice for increasing an educator's implementation fidelity (i.e., the degree to which an intervention is implemented as intended) of behavioral and academic interventions (Fallon et al., 2015). During performance feedback, a trainer provides a detailed description of what the educator is doing well (e.g., steps implemented with fidelity) and what the educator is not doing well (e.g., steps not implemented with fidelity or not implemented at all). Brock and Anderson (2021) recently conducted a systematic review of experimental studies that measured the efficacy of paraprofessional implementation of interventions between 2012-2019. Three studies used function-based intervention plans (FBIP) to support students who demonstrated challenging behavior. All three studies used the following training strategies to effectively increase paraprofessionals' implementation fidelity of students' FBIPs: (a) description of the practice, (b) modeling the practice, (c) role-play the practice, and (d) performance feedback (Brock & Anderson, 2021). Prior research also suggests that when effective FBIPs are implemented, there is a direct relationship between high implementation fidelity and improvement in student behavior (Cook et al., 2012).

One study has explored training peer mentors to implement FBIP in the PSE setting. Lansey et al. (2021) examined the relationship between training and coaching with performance feedback and peer mentors' fidelity of FBIPs developed for students with ID and ASD in an inclusive university-based PSE program. The authors trained three peer mentors on three different students' FBIP and then provided follow-up performance feedback on their implementation of the FBIP. Results revealed that peer mentors' fidelity immediately improved after the initial training where they learned about the students' FBIP and increased further after receiving performance feedback on their implementation of the FBIP. Between one and two coaching sessions with performance feedback were needed for peer mentors to reach consistently high levels of fidelity. Further, a functional relation existed between peer mentor fidelity and the behavior of two of the three students. These PSE students specifically learned communication and social skills that likely increased their opportunities to learn across inclusive PSE contexts.

In addition to the need to determine effective training strategies for peer mentors, there is also a demand for continued intervention research to determine valid and reliable PSE program outcomes for students. Whirley et al. (2020) conducted a scoping review of the literature between 2008 and 2018 of college campus PSE programs for students with IDD to identify gaps and avenues of future research. Only 34% of the identified studies included inventions to improve students' academic, behavioral, independent living, social, or employment skills. Although there has been an increase in the number of intervention studies in recent years, additional progress is needed to address the demand for valid and reliable program outcomes (Whirley et al., 2020). Whirley et al. also reported the disability labels of the 279 students included in the studies. Most students had ID (n = 128)

or autism spectrum disorder (ASD; *n* = 67). Few students had a disability label of multiple disabilities and no students had hearing or visual impairments. Given the unique needs of students with multiple disabilities, including individualized supports required for students with sensory impairments, future research is necessary on these populations of PSE students.

The purpose of this study was to examine the relationship between training without performance feedback and subsequent setting-specific training with performance feedback and a peer mentor's implementation fidelity of the FBIP across settings. An additional purpose of this study was to examine the relationship between the peer mentor's fidelity of the FBIP and the student's on-task behavior across settings. For this study, a FBIP was developed for a student with multiple disabilities, including ID and sensory impairments, participating in an inclusive university-based PSE program. The following research questions were addressed: (a) How does training without performance feedback impact a peer mentor's implementation fidelity of a FBIP and a student's on-task behavior across settings? (b) How does setting-specific training with performance feedback impact a peer mentor's implementation fidelity across settings? And, (c) What is the relationship between a peer mentor's implementation fidelity of a FBIP and a student's on-task behavior across settings?

Method

Participants

Participants were one student and one peer mentor. The student participant, Juliana, was an 18-year-old Latina female in her first year of the PSE program. Her disability label was multiple disabilities, including moderate intellectual disability, visual impairment, hearing impairment, and speech-language impairment. Juliana primarily used verbal speech to communicate. She had unilateral hearing loss in her right ear and did not use a hearing aid. Juliana had corrective glasses to improve her farsighted vision (i.e., blurry close objects) but primarily kept them in her backpack and chose to wear them infrequently. Juliana was motivated to socialize with her peers and struggled with high demands (e.g., class assignments).

The peer mentor participant, Erin, was a 20-year-old white female. She was in her junior year of college majoring in Special Education – Mild to Moderate Disabilities. Erin had one semester of experience as a peer mentor in the program, three years of experience working with individuals with disabilities as a paid employee, and ten years of experience being personally involved (e.g., friends, family) with individuals with disabilities.

Settings

This study was conducted in an inclusive PSE program housed at a public four-year university. The university has approximately 45,000 students and is located in a mid-sized city in the southwest United States. Eighteen students with ID were enrolled in the PSE program: 6 first-year, 11 second-year, and one third-year. Seniors in high school with ID

who attended nearby school districts were eligible to apply to the PSE program. They were required to submit an application, be observed at their high school, and have an on-campus interview intended to assess their skills in a variety of areas (e.g., technology, purchasing) and their interest in continuing their education. Individuals involved in the on-campus interview were the PSE program director and four PSE educators who were certified special or general education teachers, all working at the university to support the students in the program. Accepted students were dually enrolled at their high school and the university as non-degree seeking students. Students in the program were at the university campus each day; they audited courses, participated in internships, and attended campus activities.

These 18 students were supported by thirty undergraduate college students working as peer mentors. Peer mentors supported students to attend courses, complete course assignments, and participate in work-based internships and campus activities. College students interested in being peer mentors had to submit their resumes and have an interview with PSE educators. Accepted peer mentors participated in a full-day on-campus orientation before supporting students. Orientation topics included (a) descriptions of the students (e.g., 18–22 years old, dually enrolled); (b) goals of the program (e.g., gain competitive employment, improve self-determination, increase community integration); (c) core values (e.g., least-dangerous assumption, the dignity of risk, age-appropriateness, natural proportions, person-first language, objectifying language); (d) peer mentors' roles (e.g., role model, advocate, ambassador, coach) and responsibilities; (e) support strategies (e.g., wait time, least to most prompting, choice, the student leads); and (f) student-specific information (e.g., supports, medical needs). During the semester, peer mentors received two evaluations from the PSE educators. They were also required to complete three online modules during the semester that expanded on orientation topics, including (1) core values, (2) roles and responsibilities, and (3) wait time and prompting hierarchy. Peer mentors then completed corresponding quizzes or discussions on the module's content.

To recruit a student participant, the researcher (first author) met with the PSE educators to discuss students who demonstrated challenging behavior and would benefit from individualized support. The researcher did not specify the type of challenging behavior but rather asked the PSE educators to identify student(s) whose behavior resulted in decreased inclusion and opportunities to learn. The PSE educators unanimously identified Juliana as needing additional individualized behavioral support across multiple settings.

PSE educators relayed that Juliana primarily struggled with accessing and understanding information (i.e., transitions, questions) even when presented in multiple formats. Juliana's ID and dual-sensory impairment made increasing access to various forms of information particularly important for comprehension and to increase her opportunities to learn across inclusive PSE contexts. Juliana would often get frustrated when she did not comprehend information, resulting in an escalation in her behavior, including refusing to get off her phone or iPad; leaving the area; pushing, cursing, or yelling at peer mentors; and calling 9-1-1 at inappropriate times (e.g., to report construction in front of her class building or when she disagreed with a peer mentor).

After identifying Juliana as needing additional individualized behavior support to increase her inclusion and opportunities to learn, the PSE educators then identified the settings where Juliana's challenging behavior was most likely to occur and the peer mentor(s) who supported her in those settings. The settings where Juliana was most likely to demonstrate challenging behavior included Juliana's class, a computer lab where Juliana did class-related work (e.g., assignments, vocabulary), and transitioning to her internship. One peer mentor, Erin, supported Juliana in all three of those settings, and thus, Erin was selected to participate in the study. The researcher first obtained signed consent for Juliana to participate in the study and then contacted Erin and obtained signed consent for her participation in the study.

The researcher collected data on student behavior and peer mentor fidelity across three settings: Computer Lab, Class, and Internship Transition. The computer lab was a small public space in the Education building for any student, staff, or faculty to use. The computer lab had 10 desktop computers that lined two walls of the room, one small table at the front of the room, and one 6-person table at the back of the room next to a large whiteboard. While in the computer lab, Juliana worked one-on-one with Erin at one of the tables on class content, including defining and reviewing vocabulary words from class and completing assignments. Class occurred in a large collaborative learning classroom for 150 students with table groupings for four people. Class content was typically projected on large screens in the middle of the room as well as on TV monitors throughout the space. While in class, Juliana would take notes and participate in activities with Erin's support. Internship Transition occurred when Juliana walked from the computer lab where she worked on class vocabulary to the bathroom to change her shirt for her internship, and then back to the computer to gather her belongings, or straight to her internship. All described settings were in the same Education building on campus. Each of the peer mentor training sessions also occurred in a private office in the same building.

Design

An A-B-C-C'-C" multiple baseline across settings design was used to determine the effect of training with and without performance feedback on the peer mentor's fidelity of the student's FBIP and the effect on the student's on-task behavior across the three settings.

Once informed consent was obtained, the researcher completed a comprehensive functional behavior assessment to determine the function of Juliana's behaviors across settings and then developed a FBIP. The intervention elements of Juliana's FBIP were used to develop a checklist to assess the peer mentor's fidelity (Table 1). Baseline data were collected on Erin's fidelity of Juliana's FBIP before receiving any training (A). Following baseline, the researcher met with Erin individually while she was not supporting Juliana and trained her on how to implement the FBIP components, but did not provide guidance as to how to implement the FBIP in specific settings and did not provide performance feedback (B). In the next phase, the researcher met with Erin to provide training with performance feedback on Erin's implementation fidelity of the FBIP in the Computer Lab setting (C), followed by training with performance feedback in the Class setting (C'), and finally training with performance feedback in the Internship Transition setting (C").

Function-Based Intervention Plan

The researcher conducted a comprehensive functional behavior assessment to identify Juliana's challenging (i.e., target) behaviors and determine their function(s) in each of the settings. The researcher observed Juliana two or three times in each setting for a minimum of 15 minutes per observation. A-B-C (antecedent – behavior – consequence) data were collected during each observation. Three of Juliana's PSE educators were interviewed, as well as her peer mentor, Erin, using the *Preliminary Functional Assessment Survey* (Dunlap et al., 1993). The survey included questions about Juliana's behaviors, antecedents, consequences, and reinforcers. Descriptive data from observations and interviews were entered into the *Function Matrix* (Umbreit et al., 2007) to determine if Juliana engaged in the target behaviors to access or escape activities, attention, or sensory stimulation. The function of Juliana's behaviors was the same across all three settings: escape non-preferred activities.

Juliana's target behavior was off-task behavior, defined as engaging in tasks other than her scheduled academic or internship-related tasks. Off-task behaviors included walking, running, or sitting away from the work area, using her tablet or phone for non-related tasks, and going to the bathroom for more than 5 minutes. Occasionally Juliana's behavior escalated to yelling, cursing, and/or pushing peer mentors.

The replacement behavior was on-task behaviors, defined as engaging in academic tasks or internship preparation and transition. For Computer Lab, on-task behavior included writing, typing, drawing, speaking about academic vocabulary, or watching Erin or a video about academic vocabulary. For Class, on-task behavior included listening to (i.e., watching) the speaker, watching projected content (e.g., video, PowerPoint), writing notes or in-class assignments, and talking to peers about content related to the class. For Internship Transition, on-task behavior included taking out her work shirt from her backpack, walking to the bathroom, taking 5 minutes or less to change into her work shirt, and walking back to the computer lab to pick up personal belongings before transitioning to her internship site.

Using the *Function-Based Intervention Decision Model* (Umbreit et al., 2007), a behavior intervention was developed for Juliana that included three method elements. First, environmental conditions were adjusted to increase the likelihood of on-task behavior and eliminate the likelihood of off-task behavior. In this case, Erin supported Juliana to reference her visual schedule before transitions, allowed Juliana to transition to her internship independently, offered choices instead of direction, adapted course content, and integrated systematic breaks into tasks. Second, positive reinforcement was provided for on-task behavior. In this case, Erin provided verbal praise or a high-five at each step or natural pause when Juliana was on-task. Third, the consequence that previously reinforced off-task behavior was withheld. In this case, Erin did not acknowledge Juliana's off-task behavior and instead immediately and positively redirected Juliana to what she should be doing (see details of behavior plan in Table 1; Umbreit et al., 2007). Upon completion, the FBIP was reviewed by a Board-Certified Behavior Analyst.

As part of the FBIP, Juliana and Erin were each given a tablet. On each tablet was a scheduling app with visuals, voice output, "now" and "then" markers, and the options to check off activities once completed. The researcher prepared the tablet for Juliana by embedding her schedule in the scheduling app, turning off alerts from all apps except for the scheduling app, removing apps that were known to be used to escape activities, enlarging the tablet's text, updating the settings to allow for voice output of text, and increasing the tablet's volume.

Data Collection and Analysis

Data was collected over 26 days during one academic semester. Opportunities for data collection occurred on Mondays, Wednesdays, and Fridays. All observations and training sessions were video recorded.

Peer Mentor Implementation Fidelity

Using Juliana's FBIP, the researcher created a checklist to track Erin's implementation fidelity of each of the eight elements (Table 1) of the plan. Each element on the fidelity checklist was measured for accuracy using a Likert rating scale (0 = not implemented, 4 = implemented with 100% accuracy). Each element included descriptive anchors for scores zero, two, and four to increase consistency and interobserver agreement. If there was no opportunity for a checklist element to occur, the element was not scored, nor included in the total possible points for that observation. Erin's fidelity was calculated by summing the scores of all applicable elements, dividing that sum by the total possible points, and multiplying by 100 to yield a percentage (Kazdin, 2011). Means and standard deviations were also calculated across study conditions.

Student Behavior

Momentary time sampling was used to measure Juliana's on-task behavior. An occurrence was recorded if Juliana was on-task at the end of the 20-second interval. A nonoccurrence was recorded if Juliana was off-task at the end of the 20-second interval. Each observation lasted approximately 10 minutes for a total of 30 intervals. Data were analyzed for each observation by obtaining a percentage of on-task intervals to total intervals (Kazdin, 2011). Means and ranges were then calculated across study conditions.

Baseline (A)

Erin had no prior knowledge of intervention elements during baseline conditions and provided support as usual. Baseline conditions across all three settings lasted 11 days.

Training (B)

The researcher trained Erin on how to implement the seven elements of Juliana's FBIP. During this initial training, the researcher (a) described each behavior intervention element, (b) explained what was expected of the peer mentor and their role in the

intervention, (c) explained why the intervention was chosen for Juliana based on the function of her behaviors, (d) explained how the intervention would help Juliana immediately and in the future, (e) modeled the intervention through role-play, (f) had the peer mentor role-play the intervention, and (g) asked the peer mentor if they had questions (Lansey et al., 2021). The initial training was intended to mirror an in-service professional development. Broad examples were used to describe how Erin should implement Juliana's FBIP (e.g., "You should acknowledge Juliana's behavior every time she is on-task with a 'good job!' or high-five, for example."). No information was provided to Erin about how she should implement the behavior plan in specific settings. Further, no performance feedback was provided to Erin. The training session lasted 75 minutes. Following training, data were collected on Erin's fidelity across all three settings until a stable pattern emerged, through visual analysis of graphed data.

Although Erin's implementation fidelity increased during training conditions, Juliana's on-task behavior remained low during the training condition across all settings. After consulting a Board-Certified Behavior Analyst, the researcher added an eighth element to Juliana's FBIP and Erin's fidelity checklist: "Transitioning Off Device" (Table 1). This element was introduced to Erin during the first training session with performance feedback (Computer Lab – C) and her fidelity of this element was measured across all subsequent conditions.

Computer Lab Training (C)

The researcher randomly selected the order in which each setting-specific training with performance feedback condition would occur: Computer Lab, Class, Internship Transition. The researcher adhered to the following protocol: (a) asked open-ended, reflective question(s) about Erin's implementation, (b) provided positive feedback on specific examples of correct implementation, (c) provided specific constructive feedback on Erin's implementation, (d) suggested two areas for improvement, (e) role-played or video modeled the correct implementation of selected areas of improvement, (f) offered specific suggestions for each area of improvement, and (g) asked if Erin had any questions (Lansey et al., 2021).

During each training with performance feedback, the researcher showed at least one video recording of Erin correctly implementing the intervention with Juliana to provide specific positive feedback. The researcher also showed video recordings of Erin incorrectly implementing the intervention with Juliana to provide specific constructive feedback. The two intervention elements with the lowest accumulative Likert ratings during Computer Lab in the previous training condition were selected for improvement. The selected areas of improvement for Computer Lab training were Element 5: On-Task and Element 7: Off-Task (see Table 1). The researcher provided specific performance feedback on how Erin should support Juliana with vocabulary, including switching off between vocabulary words and preferred activities, and incorporating Juliana's preferences while doing vocabulary (e.g., video recording herself saying the word and its meaning). The Computer Lab training lasted 36 minutes.

Computer Lab Training (C')

Following Computer Lab, the researcher trained Erin to support Juliana in Class using the same protocol. The researcher showed at least one video recording of Erin correctly implementing the intervention with Juliana to provide specific positive feedback. The researcher also showed video recordings of Erin incorrectly implementing the intervention to provide specific constructive feedback. The selected areas of improvement were the two intervention elements with the lowest accumulative fidelity during Class in the previous Computer Lab condition: Element 4: Content and Element 5: On-Task. The researcher provided specific performance feedback on how Erin should support Juliana during Class, including strategies to adapt the class content and involve the student. The Class training session lasted 29 minutes.

Internship Transition Training (C")

The researcher then trained Erin on her implementation of the intervention during Internship Transition conditions using the same protocol described above. Similar to the previous conditions, the researcher showed video recordings of Erin correctly implementing the intervention with Juliana to provide specific reinforcement and positive feedback. The researcher also showed video recordings of Erin incorrectly implementing the intervention with Juliana to provide specific constructive feedback. The areas of improvement selected based on the lowest accumulative fidelity during Internship Transition in the previous Class condition were Element 7: Off-Task and Element 8: Transitioning Off Device. The researcher provided specific performance feedback on how Erin should implement the intervention during Internship Transition, including modeling packing up her belongings for work. The Internship Transition training session lasted 22 minutes.

Procedural Fidelity and Interobserver Agreement

All training sessions were video recorded and observed by a second researcher who assessed the primary researcher's fidelity of the training protocols described above. The primary researcher implemented the training protocols across all four sessions with 100% accuracy.

A second researcher took interobserver agreement (IOA) data on Erin's fidelity and Juliana's behavior for a minimum of 33.3% of sessions in each condition. IOA data for Erin's implementation fidelity was collected on each applicable element of the fidelity checklist. An agreement was counted when both researchers scored Erin within one point on the 5-point (0–4) Likert scale. The agreement was calculated by dividing the number of researcher agreements by the total number of elements and then multiplying the result by 100 to yield a percentage. If an element did not occur during a session, it was not included in the total number of elements. IOA for Erin's fidelity was 95.88% during baseline (A; 36.51% of sessions), 92.92% during initial training conditions (B; 40.12% of sessions), 95.24% during Computer Lab conditions (C; 33.33% of sessions), 77.5% during Class conditions (C'; 33.33% of sessions), and 100% during Internship Transition conditions (C"; 33.33% of sessions).

Agreement for Juliana's behavior was counted when both researchers marked occurrence or nonoccurrence for the interval. The agreement was calculated by dividing the number of agreements by the total number of intervals and then multiplying the result by 100 to yield a percentage. IOA for Juliana's behavior was 96.08% during baseline (A; 36.51% of sessions), 95.83% during initial training conditions (B; 40.12% of sessions), 91.18% during Computer Lab conditions (C; 33.33% of sessions), 91.67% during Class conditions (C'; 33.33% of sessions), and 96.67% during Internship Transition conditions (C"; 33.33% of sessions).

Social Validity

Erin and Juliana's primary PSE educator both completed an adapted version of the Intervention Rating Profile – 15 (Martens et al., 1990). The survey assessed if the behavior intervention was warranted, effective, and appropriate. Questions were adapted to reflect the age of the participants (e.g., replaced "child" with "person") and the PSE setting (e.g., replaced "classroom" with "university"). Erin and the primary PSE educator rated 15 statements using a Likert scale (1-Strongly Disagree; 6-Strongly Agree) which yielded a score out of 90 possible points.

Social validity scores were positive. Erin scored 83 out of 84 possible points and the PSE educator scored 87 out of 90 possible points. Erin wrote "N/A" as a response to one statement which asked if this intervention was consistent with those she had previously used in the university setting. These six points were removed from her total possible points.

Results

This study explored the impact of training without performance feedback and setting-specific training with performance feedback on a peer mentor's implementation fidelity of a student's FBIP across three settings. Additionally, this study examined the relationship between the peer mentor's fidelity of the FBIP and the student's on-task behavior across settings.

Data are displayed graphically in Figure 1. Changes in level and trend of Erin's fidelity occurred immediately following the training without performance feedback and each subsequent setting-specific training with performance feedback. More variability in fidelity existed across settings during Training conditions compared to Computer Lab, Class, and Internship Transition conditions. No overlapping fidelity data existed across baseline and Training conditions. Erin had one overlapping data point between Training and Computer Lab conditions, two overlapping data points between Training and Class conditions, and no overlapping data points between Training and Internship Transition conditions.

Changes in level from low to moderate in Juliana's on-task behavior occurred in Class and Internship Transition settings, and low to moderate-high in Computer Lab. An increasing trend in Juliana's on-task behavior occurred across study conditions in Computer Lab, Class, and Internship Transition, with a slight decrease in Internship Transition during that condition. Variability existed in Juliana's on-task behavior across

conditions in Class and Internship Transition settings. Less variability in Juliana's on-task behavior existed during Computer Lab, particularly after setting-specific training with performance feedback began. Most on-task behavior data points were overlapping between baseline and Training conditions across settings. Juliana had three overlapping data points between Training and Computer Lab conditions, two overlapping data points between Training and Class conditions, and no overlapping data points between Training and Internship Transition conditions.

Training

Following Training, Erin's mean fidelity across all settings increased from 22.25% (range = 12.5%-30%) during baseline to 47.08% (range = 43.75%-58.33%) during Training and remained stable. Juliana's mean on-task behavior across settings during baseline was 12.91% (range = 0%-23.33%). Following training, Juliana's mean on-task behavior remained low at 16.11% (range = 0%-36.67%) across settings during Training conditions.

Computer Lab

Erin's mean implementation fidelity during baseline in the Computer Lab was 23.7% (*SD* = 6.35). After receiving Training with no performance feedback, Erin's mean fidelity in the Computer Lab setting increased to 47.5% (*SD* = 7.39). After receiving training with performance feedback on her fidelity in the Computer Lab setting, Erin's mean fidelity increased to 63.49% (*SD* = 6.98). Erin's mean fidelity in the Computer Lab consistently increased across conditions as she received training in other settings. Erin's fidelity increased further to 84.92% (*SD* = 7.28) during Class conditions. During the Internship Transition condition, Erin's fidelity during Computer Lab increased further to 94.79% (*SD* = 2.08). An immediacy of effect suggests that a functional relation existed between Training and Computer Lab conditions and Erin's fidelity. Further, training without performance feedback and one setting-specific training with performance feedback were sufficient to yield high levels of peer mentor fidelity in the Computer Lab condition.

Juliana's mean on-task behavior in the Computer Lab went from 8.15% (*SD* = 9.26%) during baseline to 17.5% (*SD* = 17.72) during Training conditions. During the Computer Lab condition, Juliana's on-task behavior remained low at 16.67% (*SD* = 16.67) but increased to 64.44% (*SD* = 6.32) during the Class condition, and to 80.91% (*SD* = 8.36) during the Internship Transition condition. A functional relation existed between Erin's fidelity and Juliana's behavior.

Class

Erin's mean fidelity during baseline was 20% (*SD* = 4.08) in the Class setting. After receiving Training without performance feedback, Erin's mean fidelity in Class increased to 43.75% (*SD* = 4.79). During the Computer Lab condition, her mean fidelity decreased slightly to 39.58% (*SD* = 3.61). After receiving training with performance feedback on her fidelity in the Class setting, Erin's mean fidelity increased slightly to 52.08% (*SD* =10.63) and remained stable at 53.33% (*SD* = 7.64) during the Internship Transition condition. Erin's fidelity during Class did not increase after receiving setting-specific training in

Computer Lab or Internship Transition. An immediacy of effect suggests a functional relation existed between Training and Class conditions and Erin's fidelity. However, training without performance feedback and one setting-specific training with performance feedback were not sufficient to yield high levels of peer mentor fidelity in the Class condition.

Juliana's mean on-task behavior during baseline in Class was 16.65% (*SD* = 6.92) and increased to 24.16% (*SD* = 16.63) during the Training condition. Juliana's mean on-task behavior during Class increased to 33.37% (*SD* = 14.56) during the Computer Lab condition and remained similar at 38.89% (*SD* = 24.12) during the Class condition. During the Internship Transition condition, Juliana's mean on-task behavior during Class increased to 46.94% (*SD* = 6.26). A functional relation existed between Erin's fidelity and Juliana's on-task behavior. However, Juliana did not reach a high level of on-task behavior likely because Erin did not reach a high level of fidelity in Class.

Internship Transition

Erin's mean Internship Transition fidelity during baseline was 23.06% (*SD* = 5.32). After receiving Training without performance feedback, Erin's mean fidelity during Internship Transition increased to 50% (*SD* = 5). During the Computer Lab condition, Erin's mean fidelity in Internship Transition further increased to 71.13% (*SD* = 0.42). During the Class condition, Erin's fidelity slightly increased to 84.42% (*SD* = 5.59). After receiving training with performance feedback on her fidelity in Internship Transition, Erin's fidelity remained similar at a mean of 85.55% (*SD* = 3.85). Erin's fidelity in Internship Transition significantly increased immediately after receiving Computer Lab training and slightly increased after Class training. These results suggest that Erin may have generalized the skills she learned during other setting-specific training sessions to the Internship Transition setting. An immediacy of effect suggests a functional relation existed between Training and Internship Transition conditions and Erin's fidelity.

Juliana's mean on-task behavior in Internship Transition during baseline was 13.94% (*SD* = 5.61) and remained low during the Training condition at 6.67% (*SD* = 6.67). During the Computer Lab condition, Juliana's on-task behavior during Internship Transition increased to 55% (*SD* = 35.35). During the Class condition, Juliana's mean on-task behavior remained similar at 54.26% (*SD* = 28.88) and dropped slightly during the Internship Transition condition to 26.11% (*SD* = 13.57).

Discussion

This study examined how training without performance feedback as well as setting-specific training with performance feedback impacted a peer mentor's implementation fidelity across settings of a FBIP developed for a student with multiple disabilities attending an inclusive PSE program. This study also explored the relationship between the peer mentor's fidelity of the FBIP and the student's on-task behavior across settings.

Erin's level of fidelity immediately increased from baseline to the Training condition by an average of 24.83% across all three settings. Results suggest a functional relation between

training without performance feedback and Erin's fidelity. Even so, Erin's fidelity remained stable but low at around 50% after training (*M* = 47.08%; range = 40%-58.33%). Results suggest that one training on a student's FBIP without performance feedback is not adequate for peer mentors to reach high levels of fidelity. These findings are supported by prior research that found that PSE peer mentors (Lansey et al., 2021) and paraprofessionals (Brock & Anderson, 2021) need performance feedback to reach high levels of FBIP fidelity.

Juliana's on-task behavior remained low and similar to baseline conditions during Training conditions across all settings. It is likely that these low levels of on-task behavior were a result of Erin's low levels of fidelity as well as not yet implementing Element 8: Transition off Device. The PSE program required that all students have a cell phone and tablet. Juliana did not have a cell phone or ready access to a tablet in high school and was primarily educated in a self-contained classroom. Most students who have multiple disabilities, ID, and dual-sensory impairment (i.e., deaf-blindness) remain segregated in self-contained or separate schools during their K–12 education (Morningstar et al., 2017). Past educational segregation makes inclusive PSE even more vital for short- and long-term student success; however, it can also make the transition to PSE, with greater expectations and demands and different supports (i.e., peer mentors), more difficult. PSE students need individualized supports to address their needs (e.g., visual and voice output schedule, enlarged text) to develop the skills necessary for succeeding in higher education and employment, such as learning how to manage their time or use technology. Further, natural supports, such as peer mentors, need the training to know how to best support students with the transition to college and in learning these essential skills.

Setting-specific training with performance feedback was necessary for Erin to improve her implementation of Juliana's FBIP across settings. Erin's fidelity in each setting increased further following the training with performance feedback specific to that setting; however, differences across settings existed. Results suggest a functional relation between Computer Lab training with performance feedback and Erin's fidelity during the Computer Lab setting. These findings suggest that in some settings, one training without performance feedback and one training with performance feedback may be sufficient at increasing peer mentors' fidelity of students' FBIPs to high levels. Erin's fidelity, however, did not immediately increase to high levels (i.e., improve to above 85%) after receiving Computer Lab training. Instead, the trend of her fidelity increased over five sessions to reach high fidelity levels. After three of these sessions, Erin received setting-specific training in Class. These results suggest that additional practice implementing the FBIP may have been necessary for Erin to increase her fidelity to high levels. Further, although the second training with performance feedback was specific to the Class setting, there may have been a relationship between this training, learned behavior, and Erin's improved fidelity in the Computer Lab.

As Erin's fidelity increased across study conditions in Computer Lab, so did Juliana's on-task behavior. These findings are consistent with prior research that found that when PSE peer mentors implement FBIP with high fidelity, students' behavior also improves (Lansey et al., 2021). These findings also suggest that the FBIP was individualized and addressed the function of Juliana's behavior in the Computer Lab setting. Further, these findings

suggest that with individualized and natural supports, PSE students can have increased opportunities to learn college course content (e.g., science concepts) and build skills that may transfer to employment contexts (e.g., using a schedule and cell phone).

Results suggest a functional relation between Class training with performance feedback and Erin's fidelity during the Class setting; however, there is not a large effect. The trend of her fidelity after receiving Class training with performance feedback increased, but she never reached high levels. Erin consistently struggled with implementing Element 5: On-Task and Element 7: Off-task (see Table 1) during Class because she was not paying as close attention to Juliana's behavior in this setting. During Class, Erin was also expected to implement Element 4: Content where she had to adapt the course content on the spot without advanced preparation. This expectation resulted in Erin focusing on adapting content instead of reinforcing Juliana's on-task behavior or redirecting her off-task behavior. During Computer Lab, Erin was also expected to implement Element 4: Content; however, because Juliana ate lunch before Computer Lab, Erin was able to prepare adaptations in advance and consequently focus on responding to Juliana's on- and off-task behavior. Additional training in the Class or embedding time for Erin to prepare class adaptations in advance was likely needed to increase her fidelity in this setting. PSE programs need to be aware of the time requirements of peer mentors to adapt content and build this time in their schedules; alternatively, PSE educators could adapt course content and provide it to students and peer mentors.

A functional relation existed between Juliana's on-task behavior in Class and Erin's fidelity. These findings suggest that the FBIP was individualized and addressed the function of Juliana's behavior in the Computer Lab setting. Juliana's on-task behavior likely remained at moderate levels because Erin did not reach high levels of fidelity. An additional Class training or time to adapt content would have likely increased Erin's fidelity in this setting and, consequently, increased Juliana's on-task behavior. These findings suggest that PSE students can learn and improve skills used in inclusive college courses, such as notetaking and engaging with peers in activities, with individualized supports provided by peer mentors.

Results suggest a functional relation between Internship Transition training with performance feedback and Erin's fidelity during the Internship Transition setting; however, there is not a large effect. Erin was already implementing Juliana's FBIP at moderate to high levels of fidelity by the time she was provided Internship Transition training with performance feedback. Although training with performance feedback was setting-specific and focused on different skills, Erin's fidelity immediately increased in the Internship Transition setting after receiving training with performance feedback in Computer Lab and then kept this trend after receiving Class training. Results suggest that Erin likely generalized the skills learned during each setting-specific training to the Internship Transition settings. These findings imply that some PSE peer mentors might only require one to two trainings with performance feedback to implement students' FBIP with high fidelity across multiple but also specific settings.

Juliana's on-task behavior improved slightly in the Internship Transition setting as Erin's fidelity increased and reached high levels of fidelity (i.e., above 85%) across conditions.

There is not a clear functional relation between Erin's fidelity and Juliana's on-task behavior in this setting. Further, Juliana's on-task behavior was more variable in this setting compared to other settings. It is possible that the FBIP did not fully address the function of Juliana's behavior in this setting. Juliana struggled with transitions, and although she had individualized supports to better understand her routine, she may have needed additional supports or incentives after transitioning. PSE programs should collect data on fidelity and behavior and make data-based adjustments to the FBIP, particularly when peer mentor fidelity is high and there is great variability in students' behavior.

Limitations

One limitation is that this study was conducted with only one student-peer mentor pair. Evidence of functional relations would have been stronger if demonstrated across multiple pairs. The researcher was replicating study conditions with a second student-peer mentor pair in the subsequent academic semester; however, this study ended due to the university's closure because of COVID-19. Future research should explore the impact of training on students' FBIP with performance feedback across multiple peer mentors.

A second limitation is that the FBIP should have been adjusted during the intervention to account for the variability of Juliana's on-task behavior in Internship Transition and Erin's low fidelity in Class. Specifically, a lack of scheduled incentive for Juliana to transition to her internship likely caused Juliana's on-task behavior to be variable during this setting as Erin's fidelity increased and remained steady. Further, researchers should have addressed the lack of planning time Erin had to adapt course content, as this very likely caused her fidelity to remain low during the Class setting. Future researchers should be sure to visually analyze graphed data after each session and make data-based decisions to adjust the intervention accordingly.

A third limitation is that social validity data were not collected from Erin on the acceptability and effectiveness of the researcher training protocols to improve fidelity. Social validity assessment of training methods would allow researchers to select procedures that peer mentors favor and, in turn, are more likely to result in higher fidelity (Strohmeier et al., 2014).

Conclusion

Most students with ID are unemployed or isolated in vocational workshops and do not attend PSE after high school (Avellone et al., 2021). Effective training practices must be established to ensure that postsecondary peer mentors provide individualized supports that improve students' opportunities to learn, skill development, and inclusion. This is particularly important for students who have multiple disabilities, ID, and dual-sensory impairment (i.e., deaf-blindness) and remain largely segregated during their K–12 education (Morningstar et al., 2017). This study supports and extends previous research (Lansey et al., 2021), suggesting that with training, including performance feedback, peer mentors can support students who demonstrate challenging behavior to develop social, communication, and academic skills that improve their opportunities to learn in inclusive contexts. Increased skill development and opportunities to learn may lead to improved

long-term outcomes, such as obtaining competitive employment and increasing self-determination (Avellone et al., 2021; Moore & Schelling, 2018; Smith et al., 2018).

Author Note

We wish to acknowledge the contribution of the late Dr. Shirin Antia, Professor Emerita, for her guidance in the development, implementation, and interpretation of this research.

References

Avellone, L., Camden, J., Taylor, J., & Wehman, P. (2021). Employment outcomes for students with intellectual disabilities in postsecondary education programs: A scoping review. *Journal of Postsecondary Education & Disability, 34*(3).

Brock, M. E., & Anderson, E. J. (2021). Training paraprofessionals who work with students with intellectual and developmental disabilities: What does the research say? *Psychology in the Schools, 58*(4), 702–722. https://doi.org/10.1002/pits.22386

Carter, E. W., Gustafson, J. R., Mackay, M. M., Martin, K. P., Parsley, M. V., Graves, J., Day. T., McCabe, L., Lazarz, H., McMillan, E. D., Schiro-Geist, C., Williams, M., Beeson. T., & Cayton, J. (2019). Motivations and expectations of peer mentors within inclusive higher education programs for students with intellectual disability. *Career Development and Transition for Exceptional Individuals, 42*(3) 168–178. https://doi.org/10.1177/2165143418779989

Carter, E. W., & McCabe, L. E. (2021). Peer perspectives within the inclusive PSE movement: A systematic review. *Behavior Modification, 45*(2), 215–250. https://doi.org/10.1177/0145445520979789

Cook, C. R., Mayer, C. R., Wright, D. B., Kraemer, B., Wallace, M. D., Dart, E., Collins, T., & Restori, A. (2012). Exploring the link among behavior intervention plans, treatment integrity, and student outcomes under natural educational conditions. *The Journal of Special Education, 46*(1), 3–16. http://doi.org/10.1177/0022466910369941

Dunlap, G., Kern-Dunlap, L., dePerczel, M., Clarke, S., Wilson, D., Childs, K. E., & Falk, G. (1993). Preliminary functional assessment survey [Unpublished document]. Division of Applied Research and Educational Services, University of South Florida.

Fallon, L. M., Collier-Meek, M. A., Maggin, D. M., Sanetti, L. M., & Johnson, A. H. (2015). Is performance feedback for educators an evidence-based practice? A systematic review and evaluation based on single-case research. *Exceptional Children, 81*(2), 227–246. https://doi.org/10.1177/0014402914551738

Grigal, M., & Papay, C. (2018). The promise of PSE for students with intellectual disability. *New Directions for Adult and Continuing Education, 160*, 77–88. https://doi.org/10.1002/ace.20301

Higher Education Opportunity Act of 2008, Pub. L. No. 110–315 § 122 STAT. 3078 (2008).

Kazdin, A. E. (2011). Single-case research designs: Methods for clinical and applied settings (2nd ed.). Oxford University Press. https://doi.org/10.1080/07317107.2012.654458

Kleinert, H. L., Jones, M. M., Sheppard-Jones, K., Harp, B., & Harrison, E. M. (2012). Students with intellectual disabilities going to college? Absolutely! *Teaching Exceptional Children, 44*(5), 26–35. https://doi.org/10.1177/004005991204400503

Lansey, K. R., Antia, S., MacFarland, S. Z., & Umbreit, J. (2021). Training and coaching: Impact on peer mentor fidelity and behavior of PSE students with autism and intellectual disability. *Education and Training in Autism and Developmental Disabilities, 56*(3), 328-340.

Martens, B., Witt, J., Elliott, S., Darveaux, D., & Tingstom, D. H. (1990). Intervention

rating profile-15. *Journal of School Psychology, 28*, 165-169.
Moore, E. J., & Schelling, A. (2018). Postsecondary inclusion for individuals with an intellectual disability and its effects on employment. *Journal of Intellectual Disabilities, 19* (2), 130-148. http://doi.org/10.1177/1744629514564448
Morningstar, M. E., Kurth, J. A., & Johnson, P. E. (2017). Examining national trends in educational placements for students with significant disabilities. *Remedial and Special Education, 38*(1), 3-12. https://doi.org/10.1177/0741932516678327
National Coordinating Center Accreditation Workgroup. (2016). Report on model accreditation standards for higher education programs for students with intellectual disability. *Institute for Community Inclusion*.
Smith, F., Grigal, M., & Shepard, J. (2018). Impact of postsecondary education on employment outcomes of youth with intellectual disability served by vocational rehabilitation. *Think College Fast Facts, 18*, 1-2.
Strohmeier, C., Mulé, C., & Luiselli, J. K. (2014). Social validity assessment of training methods to improve treatment integrity of special education service providers. *Behavior Analysis in Practice, 7*(1), 15-20. https://doi.org/10.1007/s40617-014-0004-5.
Taub, D. A., McCord, J. A., & Ryndak, D. L. (2017). Opportunities to learn for students with extensive support needs: A context of research-supported practices for all in general education classes. *The Journal of Special Education, 51*(3), 127-137. http://dx.doi.org/10.1177/0022466917696263
Uditsky, B., & Hughson, E. (2012). Inclusive PSE—An evidence-based moral imperative. *Journal of Policy and Practice in Intellectual Disabilities, 9*(4), 298–302. https://doi.org/10.1111/jppi.12005
Umbreit, J., Ferro, J., Liaupsin, C. J., & Lane, K. L. (2007). Functional behavior assessment and function-based intervention: An effective, practical approach. Pearson Education, Inc.
Whirley, M. L., Gilson, C. B., & Gushanas, C. M. (2020). Postsecondary education programs on college campuses supporting adults with intellectual and developmental disabilities in the literature: A scoping review. *Career Development and Transition for Exceptional Individuals, 43*(4), 195-208. https://doi.org/10.1177/2165143420929655

Table 1

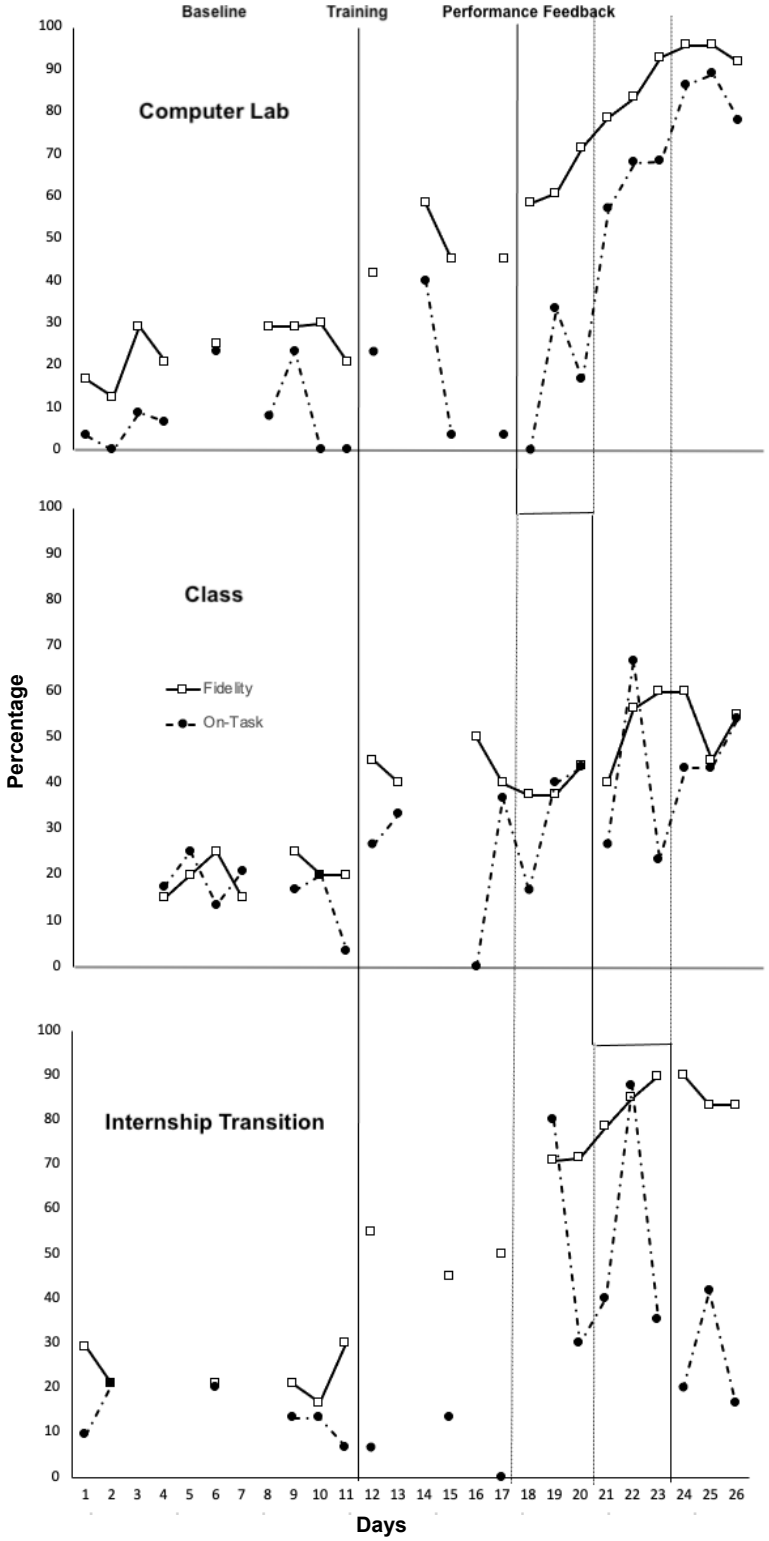
Peer Mentor's Implementation Fidelity Checklist

Erin's Fidelity Checklist
1. Transitions: Before each transition, the student references her schedule. 2. Independence: Allows the student to be completely independent in changing for work and walking to work. 3. Choices: Provide choices instead of direction. 4. Content: a) focus on 1-2 topics or words; b) use strategies such as audio recording, images, and videos, writing or drawing, and sorting; c) referencing background knowledge, d) systematic breaks (switching between non-preferred and preferred activities). 5. On-Task: Each step / natural pause provide praise (e.g., high-five, "nice work!") 6. Off-Task: Don't acknowledge the off-task behavior. 7. Off-Task: Immediately and positively continue the demand of being on-task by redirecting to what the student should be doing. 8. Transition Off Device: If the student is on a device when supposed to be on-task: a. "If you ____ (e.g., do one vocab word), then you can use device afterward" b. Provide choices of where to put away the device c. Provide 30 seconds of wait time 2. Continue if the student does not choose to put the device away: a. Provide choices again AND state the consequence of having to give the device to a PSE educator for the rest of day if the student does not choose b. Provide 30 seconds of wait time 3. Continue if the student does not choose to put the device away: a. Group text staff with the device (e.g., "phone") and your location.

Note. This table illustrates Erin's fidelity checklist developed from Juliana's FBIP.

Figure 1

Peer Mentor Implementation Fidelity and Student Behavior Graph



Note. This figure illustrates Erin's fidelity and Juliana's on-task behavior by conditions.