Development and Validation of the Peer-Mediated Impact Survey for Peers (PMIS:P)

By

Hilary E. Travers

Dissertation

Submitted to the Faculty of the

Graduate School of Vanderbilt University

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

in

Special Education

May 14th, 2021

Nashville, Tennessee

Approved:

Erik W. Carter, Ph.D.

Blair P. Lloyd, Ph.D.

Elizabeth E. Biggs, Ph.D.

Jennifer R. Ledford, Ph.D.

Zachary Rossetti, Ph.D.

TABLE OF CONTENTS

List of Tables

Table **Page**

List of Figures

Figure **Page**

Chapter I

Introduction

Increasing the inclusion of students with disabilities—including students with intellectual and developmental disabilities (IDD)—is a principal goal of many legislative, policy, and research initiatives (e.g., Agran et al., 2020; Individuals with Disabilities Education Improvement Act (IDEIA), 2004; Morningstar et al., 2016; Ryndak et al., 2013; Thoma et al., 2015). However, ensuring that students with IDD benefit socially and academically in inclusive contexts remains a challenging task, particularly at the secondary (i.e., middle and high school) and post-secondary (i.e., inclusive higher education) levels. One approach that has been widely adopted to address this challenge is peer-mediated intervention (PMI). PMIs are a group of interventions that provide opportunities for students with and without disabilities to work together and support one another. Specifically, PMIs refer to formal and sustained experiences in which peers without disabilities are taught or directed by an adult to implement instructional programs, behavioral interventions, and/or facilitate social interactions in support of students with disabilities (Chan et al., 2009).

Some of the most common PMI approaches evaluated at the secondary and post-secondary level include peer support arrangements, peer networks, peer buddy programs, peer mentorship programs, and Unified Sports teams (Travers & Carter, under review). Peer support arrangements involve one or more students without developmental disabilities providing social and/or academic support to a classmate with a disability in a general education classroom (Carter & Kennedy, 2006). Peer networks establish cohesive social groups and provide opportunities for

students to engage in shared activities in non-academic contexts (e.g., Gardner et al., 2014; Haring & Breen, 1992; Hochman et al., 2015). Peer buddy programs are designed to promote social interaction and social relationships among students with and without disabilities (e.g., Best Buddies; Hughes et al., 2001). Unlike peer support arrangements or peer networks, peers who participate in peer buddy programs often receive academic credit for their participation. Peer mentorship programs are common in inclusive higher education (IHE; i.e., inclusive post-secondary education) settings (Carter & McCabe, 2021). As peer mentors, peers can serve in a variety of formal support roles with varied responsibilities and levels of involvement. For example, many programs invite peers to serve as academic tutors, job coaches, residential supports, or facilitators of social inclusion. The experiences can differ with regard to the time commitment (e.g., daily, weekly) and structure (e.g., individually, groups). Finally, Unified Sports fosters teamwork and equitable peer relationships through sports teams comprised of students with and without disabilities (Siperstein et al., 2019). Through Unified Sports teams, students with and without disabilities interact and work together as teammates under the coaching and facilitation of school staff.

PMI approaches can vary in numerous ways. Some examples include the criteria used to select peers and students, the roles peers assume, the training peers receive, the locations in which students spend time together, the duration of the intervention, and the amount of adult support provided throughout the intervention. However, a consistent feature of these approaches is that peers provide support for students with disabilities to interact, engage, and learn. Moreover, a series of reviews have shown that PMIs can positively impact the social and/or academic outcomes of students with IDD (e.g., Carter, 2017; Chan et al., 2009; Huber & Carter, 2016; Watkins et al., 2015). Indeed, PMI is considered an evidence-based practice for improving

the social and academic outcomes of middle and high school students with ASD (i.e., Neitzel, 2008; Wong et al., 2014). Likewise, peer support arrangements are considered an evidence-based practice for promoting social interactions for secondary students with IDD (i.e., Brock & Huber, 2017).

Despite decades worth of research documenting the impact of PMI on students with disabilities, far less is known about the outcomes for the peers without disabilities who participate in these interventions. Understanding the specific ways peers are impacted as a result of their participation in PMIs is important for a number of reasons. First, PMI research has primarily focused on how the intervention has resulted in positive outcomes for the students with disabilities. Simultaneously documenting potential peer benefits could help capture any reciprocity that may be associated with these interventions. Second, peers make up more than half of the students involved in PMIs. It is important to know how the majority of students who participate are affected by their involvement. Understanding peer outcomes allows for an exploration of the full impact of PMI for every student who is involved. Third, higher social validity ratings from individuals who implement interventions, generally, are related to higher use of interventions (e.g., Carter & Pesko, 2008; Wehby et al., 2012). As peers, in many respects, are the active implementers of PMI, it is important to understand how they perceive outcomes for themselves. If peers view the personal impact to be negative, it is unlikely they will choose to participate in PMIs in the future. Without active participation from peers, PMIs would not be possible.

Three prior reviews have synthesized information related to the impact of PMIs on peers (Carter & McCabe, 2021; Schaefer et al., 2016; Travers & Carter, 2021). Schaefer et al. (2016) identified 53 PMI studies involving students with and without intellectual disability (ID) across

elementary, middle, and high school grades. Schaefer et al. limited studies to those in which the researchers measured at least one peer behavior separate from the behavior of the student with ID. Their review found that peers were impacted in two primary ways: academically and socially. Across all of the included studies, every peer maintained or improved on all academic measures; no study reported adverse academic effects on peers. Related to social outcomes, studies in their review objectively measured a range of social-related variables. With the exception of two studies (Haring et al., 1986; Sasso et al., 1998), all studies reporting on initiations and/or responses (n = 26) showed PMIs were effective in increasing the communication between the peers and the students with ID.

Carter and McCabe (2021) identified 37 studies involving post-secondary peers who formally (e.g., academic tutor, job coach) and informally (e.g., classmate, coworker) supported college access for students with IDD (i.e., students with ID, autism spectrum disorder (ASD), and multiple disabilities (MD)). Twenty-four studies addressed how peers felt they were impacted by their experiences with IHE. These six areas of positive impact included: professional impact (e.g., change in career plan or major), disability attitudes (e.g., changes in awareness of or attitudes toward disability), social impact (e.g., development of friendships), personal growth (e.g., development of personal qualities such as strengthened communication abilities and becoming more patient), academic impact (i.e., enhanced learning), and remuneration (e.g., compensation for supporting students in IHE programs, whether by course credit or monetary payment).

Travers and Carter (2021) identified 98 studies involving PMIs implemented at the middle and high school level involving students with and without IDD. Only 66 of these studies measured and reported the impact on peers using a variety of data collection approaches (i.e.,

interviews, surveys, observations, student essays, informal conversations). Travers and Carter found that peers who participated in PMIs were positively impacted in ten ways. Areas of peer impact included: (1) social impact (e.g., new friendships, increased interactions), (2) changes in views of people with disabilities, (3) changes in future intentions (e.g., desire to participate in another PMI or a change in career plans), (4) academic impact (e.g., increase in academic engagement, change in grades), (5) development of knowledge about disability, (6) development of communication and interpersonal skills, (7) development of personal qualities (e.g., patience, kindness), (8) changes in self-perception (e.g., changes in self-worth, changes in self-acceptance), (9) enjoyment, and (10) general benefits not further specified.

These three reviews provide ample evidence to suggest that peers can be positively impacted from their experiences. However, the vast majority of peer impact data are descriptive in nature. Casual relationships between the PMI and the area of impact for peers cannot, and should not, be assumed. As well, one of the most commonly used methods to collect peer impact data is through the use of researcher-created, close-ended surveys. Although surveys are not inherently problematic, the validity and reliability of the tools used across the three reviews have not been reported.

More critical consideration should be given to how peer impact data are collected. Given the range of impact areas identified through all three prior reviews, it is clear that measurement of peer outcomes must include both objective and subjective measures. Objective measurement is particularly well suited for measuring variables that can be observed. For example, parents of peers may be concerned that their children will suffer academically if they spend large portions of their class time supporting students with disabilities. Objective measurement in the form of tracking peer grades or academic engagement both before and during a PMI can provide strong

evidence that peers are positively impacted. Subjective measurement is also necessary to explore variables that are less easily observed. For example, intrapersonal changes among peers such as changes in patience or confidence are possible to measure through observation. However, it is much more difficult to do. And further, observation of these behaviors might still require inference. Subjective measurement tools are useful and important to supplement what can be learned through objective measurement. Capturing peer outcome data using both objective and subjective measurement will better enable researchers to understand all facets of peer impact.

Several subjective measures have been developed to examine various aspects of peer impact related to involvement in a PMI. For example, multiple studies (i.e., Asmus et al., 2016; Asmus et al., 2017; Biggs et al., 2017; Born, 2015; Carter et al., 2016; Gardner et al., 2014; Hochman et al., 2015; Huber et al., 2018) have used a variation of the same social validity survey to ask peers, PMI facilitators, and/or general education teachers to rate the acceptability of the intervention goals, procedures, and outcomes for students with disabilities and their peers. Each survey contains approximately 20 statements and asks the respondent to rate the degree to which they agree with the statement using a 5-point Likert-type scale (1 = *strongly disagree*, 2= *disagree*, 3= *neutral*, 4 = *agree*, 5 = *strongly agree*). Statements addressing peer impact on peer versions of the social validity survey include: "I benefitted *socially* from being a peer support," "I benefitted *academically* from being a peer support," "My views about students with disabilities have changed for the better," "I would be a peer support again in the future," "Overall, I enjoyed being in this project," and "I also spend time with other students who have similar disabilities at my school." Although this measure has been used frequently, its validity and reliability have never been reported. Moreover, the measure addresses only a few ways in which peers may have been impacted by their participation in the PMI. For example, this

measure does not ask peers to assess any areas of potential intrapersonal growth (e.g., development of patience, empathy, compassion).

To date, there are no valid and reliable measurement tools that capture the breadth and depth of ways that peers are impacted by their involvement in PMI. Development of such a tool is necessary as it could support the work of both teachers and researchers. For example, teachers could better evaluate the outcomes for peers who participate in a range of PMIs. These results could then be shared with parents and staff to provide indication of the positive benefits of these interventions. Further, if the interventions are indeed reciprocal in nature, teachers can use this tool to document how peers, who could also benefit from social and/or academic support, are positively impacted by their involvement. Although a subjective measurement tool that is administered post-PMI only would not allow for causal inferences, it could be used as an outcome measure. Further, this tool could support hypothesis generation. For example, suppose in their work testing the efficacy of PMI for students with and without disabilities researchers distributed this tool to peers post-PMI and found a significant correlation between the amount of time peers spend with the students whom they support and the range of positive outcomes the peers perceive for themselves. Researchers could then use this information to specifically test the causal relationship between frequency of contact and benefits for peers.

The purpose of this research was to develop and validate a subjective measurement tool to understand the range of ways peers who have participated in a PMI at the middle school, high school, and post-secondary level, alongside students with IDD, are impacted by their involvement. To develop and validate this tool, the *Peer-Mediated Impact Survey for Peers* (PMIS:P), I conducted three consecutive studies with related research questions. In Study 1, I conducted a phenomenological study (Moustakas, 1994) using a focus group methodology to

understand the breath and range of ways peers are impacted by their involvement in PMI. I also explored peer- and intervention-related variables that may be associated with particular areas of impact. In Study 2, I developed a content valid measurement tool (the first draft of the PMIS:P) using the findings of Study 1. I then piloted the PMIS:P with a sample of peers to evaluate the extent to which they reported their agreement with the range of impact areas. In Study 3, I used the findings of Study 2 to refine the PMIS:P. I recruited a larger sample of peers to whom I could administer the PMIS:P to establish the construct validity and reliability of the PMIS:P. After establishing the factor structure of the tool and assessing its reliability, I made final revisions to the PMIS:P. I then examined the extent to which peers agreed they experienced the impact areas included on the revised measurement tool. Finally, I explored how student- and intervention-related variables were associated with mean ratings on the final PMIS:P measure as well as mean factor ratings.

Chapter II

Study 1: A Phenomenological Study to Understand How Peers are Impacted by Their Involvement in Peer-Mediated Interventions

The purpose of Study 1 was to understand how peers are impacted by their experiences in PMI. Three prior reviews (Carter & McCabe, 2021; Schaefer et al., 2016; Travers & Carter, 2021) provide evidence of ways peers have been impacted. I expanded on this research by conducting a phenomenological study (Moustakas, 1994) using a focus group methodology to address the following research questions:

1. What are the breath and range of ways peers are impacted by their involvement in PMI?
2. What peer- and intervention-related variables are associated with peer outcomes?

Method

Recruitment

I recruited focus group participants purposefully using criterion sampling to ensure that all participants had participated in the experience being studied (Creswell & Poth, 2018). Focus group participants had to (a) have participated in a PMI (e.g., peer network, peer support arrangement, peer buddy program, peer mentorship program, Unified Sports team) in the United States during the 2019-2020 school year alongside at least one student with an IDD; (b) have completed 6th grade and have been a student (i.e., middle school student, high school student, college student, graduate student) during the 2019-2020 school year; (c) speak English as a

primary language; and (d) have access to a computer/phone/tablet/iPad. I did not purposefully restrict the type of PMI approach. Because intervention approaches are referred to by different names across schools and states, I included the names of popular PMI approaches (i.e., those listed in the inclusion criteria) in recruitment materials to limit confusion among recruitment partners.

To recruit peers, I first emailed nine low-incidence consultants from a single state who represent each of the states regional education cooperatives; one project director for a state-wide peer partner program; two Unified Sports directors; and 26 educators and administrators from Tennessee, Kentucky, and Michigan who had experience with supporting, supervising, or managing PMIs and peer programs involving students with and without IDD at the middle or high school level. In the initial email I asked to speak with them about the purpose of the study, the inclusion criteria, and how I would share study findings with them. When necessary, I asked them to connect me with the person (e.g., school-level peer program coordinator, teacher, peer program supervisor) who would be able to send a recruitment email to the parents/guardians of peers on my behalf. I was able to connect with four low-incidence consultants for state regional education cooperatives; one project director for a state-wide peer partner program; one state-level Unified Sports director; and 10 educators and administrators. With the help of these recruitment partners, I estimate that I sent a recruitment email to approximately 200 parents. The email to parents/guardians included information about the study and a link to my electronic consent form. If a parent/guardian provided consent for their child to participate, I emailed their child with information about the study and provided a link to an electronic assent form.

I used a similar approach to invite five IHE program coordinators from Tennessee to partner with me on recruitment. As peers at the post-secondary level were all 18 years of age or

older, I asked the IHE program coordinators to send a recruitment email directly to the peers on my behalf. Coordinators sent my recruitment email to 361 peers across four IHE programs. This email included information about the study and a link to the electronic consent form. I continued recruiting peers until the focus group analyses indicated I had reached saturation (i.e., all new ideas were duplicative of previous ideas).

Participants and PMIs

A total of 41 peers from two states attended the eight focus groups (see Table 1 for participant demographics).

Table 1. *Demographic Information for Peers*

	n (%)		
Variable	Peers in focus groups (Study 1)	Peers in follow-up survey (Study 2)	Peers in validation study (Study 3)
Total number of students	41	39	278
Age			
12 - 15	7 (17.1%)	6 (15.4%)	42 (15.2%)
16 - 18	12 (29.3%)	12 (30.8%)	113 (40.6%)
19 - 21	12 (29.3%)	11 (28.2%)	97 (34.8%)
22+	10 (24.4%)	10 (25.6%)	26 (9.3%)
Grade			
Middle school (7^{th} - 8^{th} grade)	2 (4.9%)	2 (5.1%)	6 (2.1%)
High school (9^{th} - 12^{th} grade)	16 (39.0%)	15 (38.5%)	139 (50.0%)
College	21 (51.2%)	20 (51.3%)	116 (41.8%)
Post-college	2 (4.9%)	2 (5.1%)	17 (6.1%)
Gender			
Female	33 (80.5%)	33 (84.6%)	237 (85.3%)
Male	8 (19.5%)	6 (15.4%)	36 (12.9%)
Other	-	-	3 (1.1%)
Prefer not to say	-	-	2 (0.7%)
Race/ethnicity			
American Indian or Alaska Native	1 (2.4%)	1 (2.6%)	2 (0.7%)
Asian	2 (4.9%)	2 (5.1%)	15 (5.4%)
Black or African American	1 (2.4%)	1 (2.6%)	7 (2.5%)
Hispanic	0 (0.0%)	0 (0.0%)	27 (9.7%)
Multiracial	1 (2.4%)	1 (2.6%)	17 (6.1%)
White/Non-Hispanic	36 (87.8%)	34 (87.2%)	228 (82.0%)
Other	0 (0.0%)	0 (0.0%)	3 (1.1%)
Prefer not to say	0 (0.0%)	0 (0.0%)	4 (1.4%)
State			
Arizona	-	-	2 (0.7%)

California	-	-	72 (25.9%)
Colorado	-	-	1 (0.4%)
Delaware	-	-	1 (0.4%)
Florida	-	-	8 (2.9%)
Georgia	-	-	1 (0.4%)
Illinois	-	-	10 (3.6%)
Indiana	-	-	5 (1.8%)
Iowa	-	-	3 (1.1%)
Maryland	-	-	48 (17.3%)
Massachusetts	-	-	2 (0.7%)
Michigan	18 (43.9%)	17 (43.6%)	35 (12.6%)
Minnesota	-	-	11 (4.0%)
New Jersey	-	-	1 (0.4%)
New York	-	-	21 (7.6%)
North Carolina	-	-	2 (0.7%)
Ohio	-	-	4 (1.4%)
Oklahoma	-	-	1 (0.4%)
Pennsylvania	-	-	8 (2.9%)
South Carolina	-	-	2 (0.7%)
Tennessee	23 (56.1%)	22 (56.4%)	18 (6.5%)
Texas	-	-	13 (4.7%)
Virginia	-	-	7 (2.5%)
Washington	-	-	1 (0.4%)
Wisconsin	-	-	1 (0.4%)
Peer identifies as someone with a disability [a]	-	-	13 (4.7%)
Autism spectrum disorder	-	-	2 (0.7%)
Emotional disturbance	-	-	5 (1.8%)
Hearing impairment	-	-	1 (0.4%)
Intellectual disability	-	-	1 (0.4%)
Learning disability	-	-	6 (2.2%)
Other health impairment	-	-	3 (1.1%)
Speech and language impairment	-	-	1 (0.4%)
Visual impairment/Blind	-	-	2 (0.7%)
Other	-	-	5 (1.8%)
Prior experience with individuals with IDD (prior to peer program)[a]	30 (73.2%)	28 (71.8%)	213 (76.6%)
Family member with an IDD	10 (24.4%)	10 (25.6%)	67 (24.1%)
Friend with an IDD	16 (39.0%)	16 (41.0%)	101 (36.3%)
On a sports team with someone with IDD	5 (12.2%)	5 (12.8%)	19 (6.8%)
In a class with someone with an IDD, but didn't interact often	3 (7.3%)	3 (7.7%)	51 (18.3%)
In a class with someone with an IDD, interacted often	15 (36.6%)	14 (35.9%)	87 (31.3%)
Previous experience in a peer program	13 (31.7%)	13 (33.3%)	104 (37.4%)
Other	6 (14.6%)	5 (12.8%)	31 (11.2%)

Note. [a]Peers could select multiple response options; IDD = intellectual and developmental disability

The focus groups varied in size from four to eight participants (*Mdn* = 5). Following each focus group, peers completed brief questionnaires addressing their demographic characteristics and

their prior experience with individuals with IDD, the demographic characteristics of the students with whom they worked, and the characteristics of their PMI (i.e., the ways they worked with or supported student(s) with IDD, where their PMI took place, the duration of their PMI, the ways they were recruited, the training they received prior to participation in a PMI).

Of the 41 participants, 33 (80.5%) were female and the majority (87.8%) was white, non-Hispanic. Seven peers (17.1%) were 13 to 15 years old, 12 (29.3%) were 16 to 18 years old, 12 (29.3%) were 19 to 21 years old, and 10 (24.4%) were 22 years of age or older. When participating in PMIs, four peers (9.8%) were in middle school, 15 (36.6%) were in high school, 21 (51.2%) were in college, and one (2.4%) was a graduate student. Most peers (73.2%) had experience with individuals with IDD prior to participating in their PMI; several peers had multiple prior relationships/experiences. Sixteen (39.0%) had a prior friendship with an individual with an IDD; 15 (36.6%) were in a class with a student with an IDD in which they interacted often; 13 peers (31.7%) had previously participated in a PMI alongside a student or students with IDD; 10 (24.4%) had a family member with an IDD; five (12.2%) were on a sports team with an individual with an IDD; three (7.3%) were in a class with a student with an IDD, but didn't interact with the student often; and six peers (14.6%) had other prior experiences (i.e., two peers supported students with IDD through their churches, two peers were close to someone with a family member with an IDD, one peer worked with Special Olympics, and one peer worked as an assistant to a behavior therapist for three years).

Only 12 peers (29.3%) knew the specific student(s) with whom they later worked before volunteering for the PMI. Eight peers (19.5%) knew the student(s) with whom they worked from school, but didn't share any classes; six peers (14.6%) shared a class with the student(s) with whom they worked and interacted often; three (7.3%) shared a class with the student(s) with

whom they worked, but didn't interact often; one peer (2.4%) was in a school club with the student with whom they worked; and one peer (2.4%) knew the student with whom they worked from an equine therapy class the peer taught outside of school.

Because intervention approaches are referred to by different names across schools and states, I asked peers to indicate all of the places they worked with or supported student(s) with IDD as part of their program. Most peers (73.2%) spent time with the student(s) with whom they worked at lunch or during other non-structured times during the day, 65.9% spent time in a general education class, 56.1% spent time in a special education classroom, 17.1% spent time as part of a Unified Sports team, and 9.8% spent time as part of a Best Buddies club. Most students (70.7%) reported spending time in multiple locations.

Peers indicated they were recruited to participate in their PMI in a variety of ways: 34.1% volunteered after seeing a flyer for the peer program at school, 29.3% were recruited by a friend who had already participated in the PMI, 29.3% were recruited by a special education teacher in their school, 19.5% volunteered after someone made an announcement about the program in one of their classes, 17.1% were asked to participate by a friend who had already volunteered, 12.2% were recruited by a general education teacher, 4.9% were recruited by a paraprofessional, 4.9% were asked by a school staff member (not a teacher or paraprofessional), 4.9% did not remember how they were recruited, and 24.4% indicated other avenues (e.g., student with disabilities asked peer to participate, parent brought home a flyer, email newsletter). Nineteen peers (46.3%) reported being recruited through multiple avenues.

Nearly all (87.8%) peers received some training prior to participating in their PMI. They reported being provided one or more of the following: an explanation of the purpose of the PMI (75.6%); a verbal description of the PMI (70.7%); information related to disabilities generally, or

related to the student(s) with IDD with whom they worked (68.3%); opportunities to ask questions (63.4%); a written description of the PMI (58.5%); adult modeling of how to provide support to the student(s) with IDD (36.6%), instructions on how to collect data on the student(s) with IDD (31.7%), a video model (29.3%); an opportunity to practice or implement the PMI (14.6%); and/or some other information or guidance (4.9%; e.g., shown videos of interviews with students, given an opportunity to talk with peers who had previously been in the peer program). One peer said she could not remember the specific training components she received. Thirty peers (73.2%) reported they received ongoing coaching from an adult during their PMI.

The amount of time peers reported working with students with IDD through the program varied. Most peers (36.6%) worked with student(s) with IDD a few times a week or once a day (31.7%), 14.6% indicated multiple times a day, 12.2% indicated once a week, and 4.9% indicated once every few weeks. Most (78.0%) peers had participated in a PMI for at least one school year, 14.6% had participated for about one semester, and 7.3% had participated for less than one semester.

Peers reported working with an average of six (range: 1-60) students (see Table 2 for demographics of the students with IDD with whom peers worked).

Table 2. *Demographic Information about the Students with Whom Peers Worked and Supported*

	n (%) of peers selecting response		
Variable	Peers in focus groups (Study 1)	Peers in follow-up survey (Study 2)	Peers in validation study (Study 3)
Peer program grouping			
Paired with one student with an IDD	16 (39.0%)	15 (38.5%)	132 (47.5%)
Paired with multiple students with IDD	22 (53.7%)	21 (53.9%)	101 (36.3%)
In the same group or on the same team as someone with IDD	3 (7.3%)	3 (7.7%)	37 (13.3%)
Other	-	-	8 (2.9%)
Student disability[a]			
Autism spectrum disorder	28 (68.3%)	26 (66.7%)	151 (54.3%)
Down syndrome	14 (34.1%)	13 (33.3%)	114 (41.0%)

Intellectual disability	20 (48.8%)	20 (51.3%)	136 (48.9%)
Multiple disabilities	15 (36.6%)	15 (38.5%)	94 (33.8%)
Other	3 (7.3%)	3 (7.7%)	14 (5.0%)
I do not know	11 (26.8%)	11 (28.2%)	79 (28.4%)
Grade of student with an IDD[a]			
Middle school (6th - 8th grade)	7 (17.1%)	6 (15.4%)	29 (10.4%)
High school (9th - 12th grade)	16 (39.0%)	16 (41.0%)	137 (49.3%)
College	21 (51.2%)	20 (51.3%)	111 (39.9%)
Student grade unknown	-	-	27 (9.7%)
Gender of student with an IDD[a]			
Female	25 (61.0%)	24 (61.5%)	189 (68.0%)
Male	34 (82.9%)	32 (82.1%)	202 (72.7%)
Prefer not to say	-	-	3 (1.1%)
Race/ethnicity of student with an IDD[a]			
American Indian or Alaska native	1 (2.4%)	1 (2.6%)	6 (2.2%)
Asian	6 (14.6%)	6 (15.4%)	54 (19.4%)
Black or African American	15 (36.6%)	14 (35.9%)	81 (29.1%)
Hispanic/Latino	7 (17.1%)	7 (18.0%)	49 (17.6%)
Multiracial	9 (22.0%)	9 (23.1%)	41 (14.7%)
Native Hawaiian or Pacific Islander	1 (2.4%)	1 (2.6%)	7 (2.5%)
White/Non-Hispanic	38 (92.7%)	36 (92.3%)	215 (77.3%)
Other	1 (2.4%)	1 (2.6%)	12 (4.3%)
Prefer not to say	2 (4.9%)	2 (5.1%)	7 (2.5%)
I don't know	-	-	32 (11.5%)
Student communication[a]			
Verbal	40 (97.6%)	38 (97.4%)	260 (93.5%)
With pictures	6 (14.6%)	6 (15.4%)	31 (11.2%)
With manual signed (e.g., sign language)	7 (17.1%)	7 (18.0%)	23 (8.3%)
With gestures (e.g., pointing to something they want)	15 (36.6%)	15 (38.5%)	90 (32.4%)
Communication device	6 (14.6%)	6 (14.4%)	48 (17.3%)
Other	0 (0.0%)	0 (0.0%)	1 (0.4%)
Familiarity with at least one student(s) with IDD with whom the peer worked[a]	12 (29.3%)	11 (28.2%)	87 (31.3%)
Shared a class and interacted often	6 (14.6%)	6 (15.4%)	25 (9.0%)
Shared a class, but did not interact often	3 (7.3%)	3 (7.7%)	11 (4.0%)
Familiar from school, but did not share any classes	8 (19.5%)	8 (20.5%)	38 (13.7%)
On a sports team together	0 (0.0%)	0 (0.0%)	8 (2.9%)
Attend the same place of worship	0 (0.0%)	0 (0.0%)	6 (2.2%)
In a school club together	1 (2.4%)	1 (2.6%)	26 (9.4%)
Other	1 (2.4%)	1 (2.6%)	14 (5.0%)
Not reported	1 (2.4%)	0 (0.0%)	0 (0.0%)

Note. [a]Peers could select multiple response options; IDD = intellectual and developmental disability

When asked to describe the students with whom they worked, 68.3% indicated they worked with at least one student with ASD, 48.8% indicated they worked with at least one student with an ID, 36.6% indicated they worked with at least one student with MD, 34.1% indicated they worked with at least one student with Down syndrome, and 7.3% indicated they worked with at least one

student with another type of disability (e.g., visual impairment, cerebral palsy, deaf). For peers who indicated they worked with multiple students, it was not possible to discern if any of these students had both ASD and ID. Seven peers (17.1%) indicated that they did not know the disability label of any of the students with whom they worked and supported. However, all seven participants were post-secondary peers who by nature of their college program met the study inclusion criteria.

Peers also reported the gender, school level, and race/ethnicity of the students with whom they worked. Thirty-four peers (82.9%) worked with at least one male student while 25 (61.0%) indicated they worked with at least one female student. About half (51.2%) of peers worked with college students, 39.0% of peers worked with high school students (grades 9 through 12), and 17.1% worked with middle school students (grades 6 through 8; in addition to the four middle school peers who supported middle school-aged students, three high school students supported middle school students). Almost all peers indicated they worked with at least one white student (92.7%). Additionally, 36.6% of peers worked with at least one Black student, 22.0% worked with at least one multiracial student, 17.1% worked with at least one Asian student, 2.4% worked with at least one American Indian or Alaskan native student, and 2.4% worked with at least one native Hawaiian or Pacific islander student. Two peers did not know the race of at least one of the students with whom they worked, or they preferred not to say. Only seven peers (17.1%) indicated they worked with at least one student who was Hispanic.

All but one peer (97.6%) worked with at least one student who used speech to communicate. Additionally, 36.6% of peers worked with at least one student who used gestures to communicate, 17.1% worked with at least one student who used manual signs to

communicate, 14.6% worked with at least one student who used pictures to communicate, and 14.6% worked with at least one student who used a communication device.

Focus Groups and Data Collection

I used focus group methodology to examine the full range of ways peers perceived they were impacted by their involvement in PMI. I was not interested in trying to establish consensus on a common experience, but rather wanted to capture the diversity of experiences among peers. I anticipated that the diversity of experiences would generate rich discussion and provide a variety of viewpoints.

After receiving approval from the university Institutional Review Board, I provided peers who consented/assented several options for focus group times. I conducted eight focus groups over two months during the fall of 2020. Each lasted approximately 60 min and took place virtually in a private Zoom meeting room. Focus groups were conducted virtually to maintain safety standards during the global COVID-19 pandemic. Each focus group was audio-recorded and professionally transcribed. I reviewed each transcription for accuracy and de-identified any names with pseudonyms.

I facilitated each of the eight focus groups using a semi-structured interview protocol to guide the discussion (see Appendix A). Two university students—one graduate and one undergraduate—took turns as a notetaker during each interview by tracking who was speaking and noting any nonverbal behaviors (e.g., laughter, nods of agreement, gesture to another person). I began each focus group by introducing myself and explaining that we were interested in learning about the experiences of peers who have participated in peer-mediated interventions. I then asked each peer to introduce themselves, to share what made them decide to participate in

their PMI, and to describe what they did as part of their program. As this was a phenomenological study (Moustakas, 1994), I then asked peers two broad questions: “In what ways were you impacted by you experience as a peer? (Positive and negative)” and “What aspects of your peer program do you think contributed to these impacts?” Follow-up prompts were used to evoke additional detail, request clarity, or elicit specific examples. After discussing these two broad questions, I used the remaining time to ask peers more targeted questions about additional areas of impact they had not already mentioned. In a previous systematic review (Travers & Carter, 2021), I identified all of the ways middle and high school peers who have been involved in PMI alongside students with IDD were impacted by their experiences. Using the results of this review, I asked the following questions: “Have you been impacted socially?”, “Have you changed your views about individuals with disabilities?”, “Has participating in a peer program made you consider a career that involves supporting individuals with disabilities?”, “Have you been impacted academically?”, “What new things have you learned since participating in a peer program?”, “Have you noticed any changes in your communication skills?”, and “Have you noticed any other changes about yourself? (e.g., Have you become more patient?)”. I only asked these follow-up questions for areas of impact that did not naturally emerge during the earlier discussion. I used the interview protocol as a guide to ensure a general consistency across groups. However, I adopted a conversational approach to give participants latitude to expand and comment on any topics they considered relevant.

Following each interview, I completed a written reflection sheet (see Appendix B) that involved (a) recording overall impressions from the interview, (b) noting salient themes, and (c) describing similarities and differences between other focus groups. These reflection notes served as a way to document interesting findings and identify areas in which to probe deeper during

future focus groups. For example, after the third focus group I noted on my reflection sheet that I wanted to follow-up peer responses about friendship development to understand how peers felt the friendships they developed with the students with IDD were similar or different than their other friendships.

After each focus group, peers completed a background survey online using REDCap (Harris et al., 2009). The survey requested information about themselves, the student(s) with whom they worked, and their PMI program. Each peer who participated in a focus group and completed the background survey received a US$20 gift card.

Data Analysis

I adopted a team-based approach for my analysis to strengthen its trustworthiness (Patton, 2002). The team was comprised of myself, one graduate student, and one undergraduate student. I had never personally participated in a PMI or peer program. However, both the graduate and undergraduate student had prior experience in peer buddy programs during high school. Additionally, the undergraduate student was a peer mentor with one of the IHE programs from which we recruited peers. Given this potential conflict of interest the undergraduate team member did not attend the focus group of peers from this IHE program. Data analysis began as each transcript was completed and continued as an iterative process across three phases of coding.

Phase 1

During the first phase of coding, I relied on the work of van Manen (1990) and used a "selective or highlight approach" (pp. 92-93) to coding. Using this approach, each of the two university students and myself independently read the transcribed responses from each peer

participant several times, looking for statements or phrases that related to (a) the ways in which peers were impacted and (b) the aspects of the program or student specific characteristics that may have contributed to these impact areas. I then highlighted these statements and translated them into formulated meanings (Creswell & Poth, 2018; see Table 3 for a sample of highlighted statements and formulated meanings).

Table 3. *Sample of Highlighted Statements and Corresponding Formulated Meanings*

FG number	Highlighted statements	Formulated meanings
1	Peer: I will say, the emotional impact and when you're working five to six hours a week sometimes and it's a busy week, you have an exam or whatever, it gets busy and it's tiring and you're trying to organize everything. I personally enjoy working with the students, so I want to do that time even though it is tiring to me and taking that emotional toll on me.	• Emotional impact (negative)- can be tiring with already busy peer schedule • Mentally draining- trying to keep someone else organized on top of your own stuff is challenging
2	Peer: I would say that I've really grown in my patience. I've also grown in my ability to communicate to all audiences, which I think is really critical for me. That's for what I want to go into, communication is essential. And I think this offers a really wonderful opportunity to try that in a real like marketplace.	• Development of patience • Able to communicate with more diverse audience • Learned skills that will be applicable in the future
3	Peer: I really like the friendships I build with them, and it's just a really good, it makes me feel like a lot better.	• Peer developed friendships • Peers mood/well-being improved from participation
4	Peer: I'd say definitely there's been times where I'm surprised like, "Wow, you're far more capable than I thought you were."	• Peer positively surprised at the capabilities of student they worked with
5	Peer: I definitely do communicate a lot with my [students] I've had in the past. At our school, we have a limit when it comes to contact because there have been some instances when inappropriate things have happened. Some of my [students] I work with, I do keep in contact daily because they understand I have stuff going on and there's a boundary. But then there's others that are very inappropriate or they don't know how to express their emotions in a good way. So that's why we have to set boundaries. If you want to talk to someone, then you have to contact the teacher and then the teacher has to be there to talk. Because there are times when stuff does happen so we always have to be careful of that.	• Peer and student communicate regularly • Benefits and drawbacks to tech- allow for connection but can be abused if students don't understand how to use tech appropriately
6	Peer: Honestly I said before that it was definitely one of the best decisions and programs that I got involved with in college. I feel like college is a very stressful time because you're doing your schoolwork and you're going, going, going, going. But for me whenever I was working with an [PEER PROGRAM] student, it really kind of put things into perspective to me. Like all the tests and the papers that I was stressing out about, it gave me a chance to step away from that and just have fun. And maybe we were just studying in the library or maybe we're walking around the track but regardless, I was building a relationship with someone new. And I was having fun. So for me that was a huge impact. It was very stress relieving honestly.	• Participation in peer program was stress relieving for peer • Peer developed new friendship with student whom she worked with • Peer program helped peer to slow down and gain perspective on the importance of spending time investing in people in addition to schoolwork
7	Peer: But I've also had some frustrating experiences just like seeing, like when I'm in an individual classroom, I've had my [student] get like bullied to an extent which is frustrating. I've seen them get frustrated when they can't figure out their homework which I'm there to help them, but it's hard because I know they're frustrated and there's still so much I can do.	• Peer confronts other students without disabilities who bully the student she works with (advocacy)

FG number	Highlighted statements	Formulated meanings
	Interviewer: If you see them get bullied, what have you been able to do or what do you feel like your options are in that situation? Peer: I usually will just say something to the student because most of the time, sadly, I know who they are. I can usually, I'm just like, “Knock it off. That's not cool, whatever.” Then if it continues, I'll go to our special education, the leader of our program and she usually will handle the situation.	
8	Peer: It's impacted me enough to the career I want to go into. But I think a really positive thing this year is, especially with COVID and all that, sometimes it can be hard to be motivated to go to school. And so having that accountability has been really nice throughout the years, and at [school], at least that's where I go to school. A big thing that people say is like, "The work you put in is what you're going to get out also." So, the friendship and time that I put in, is the friendship I'm going to get out of it. And so that's a really big thing I've gotten out of the program.	• Peer’s future career plans have been impacted • Peer is more motivated/excited to go to school • Peer has developed a friendship with her student

Note. FG = Focus group

Highlighted statements ranged from a single sentence to an entire paragraph. Moustakas (1994) refers to this step of analysis as horizontalization, whereby researchers develop meaning from the significant highlighted statements. The number of formulated meanings per focus group averaged 66 (range 51 - 92).

Following the independent phase 1 coding of each transcript, I calculated coding reliability between each of the three coders on the highlighted passages to determine the consistency with which coders recognized the same passages as addressing peer impact or the aspects of a program associated with peer impact. Intercoder agreement was defined *a priori* as, at least 80% of the same number of words highlighted between two coders within a single peer's response. For example, if two coders highlighted at least 80% of the same words in a response, this would count as a single agreement. As well, if two coders agreed that a peer response did not relate to either of the two research questions and thus highlighted nothing within the peer response, this would also count as a single agreement. Conversely, if one coder highlighted a larger portion of text than another coder, such that less than 80% of the number of words in the response were an agreement, this would count as a single disagreement. Once the number of agreements and disagreements were computed between each coder, reliability was calculated by dividing the total number of agreements by the total number of agreements plus disagreements multiplied by 100. Intercoder agreement across focus groups between me and the graduate student averaged 75.5% (range 66.2% - 86.2%), 78.6% (range 66.2% - 88.1%) between me and the undergraduate student, and 77.4% between the two students (range 67.4% - 83.6%). For any disagreements (e.g., one coder highlighted a peer response and another did not), the highlighted statement and corresponding formulated meaning were carried into subsequent coding phases.

Phase 2

The goal of phase 2 was to reduce the number of formulated meanings identified in phase 1 to allow for the emergence of themes common to all of the participants' transcripts. I wanted to reveal a non-redundant, yet robust, list of all the ways peers felt they had been impacted by their experiences. I read and re-read each list of formulated meanings from each of the 8 focus groups while considering the thematic areas of impact identified in my previous review of peer impact (Travers & Carter, 2021). I used all this information to identify eight initial themes related to the ways peers felt they were impacted. These themes included: *social* (e.g., friendship development, changes in interaction, participation in social events), *personal growth* (e.g., patience, compassion, empathy, change in expectations of students), *changes in views* (e.g., improved or more holistic views of individuals with disabilities), *rewarding* (e.g., feel good, general enjoyment, happiness, improved quality of life), *skills* (e.g., setting personal boundaries, time management skills, communication skills, job skills), *advocacy* (e.g., becoming a better advocate, wanting to advocate or become a more informed advocate, examples of advocating), and *negative impacts* (e.g., stress, tiring/draining experiences, frustration or guilt). The eighth theme was labeled *other* for all formulated meanings that did not fit well under one of the other seven themes. Using the eight identified themes, each of the three coders independently sorted each of the formulated meanings identified in phase 1 to one of the eight themes. After sorting the formulated meanings from the first four focus groups, we created two additional themes: *future plans* (e.g., mentions of a college major or career focused on supporting individuals with disabilities or future involvement with individuals with disabilities) and *academic* (e.g., change in grades or academic engagement).

During phase 2, I also sorted formulated meanings that related to variables that may be associated with peer impact. I individually reviewed the highlighted segments from phase 1 coding and the corresponding formulated meanings. Then, I sorted and assigned the formulated meaning to the appropriate impact theme. For example consider the following highlighted statement and corresponding formulated meaning:

> I work with two students, two boys, and both of them routinely reach out to me just to check in and say hi. And one of them I talk to at least three or four times a day. He'll video-call me and just let me know how he's doing. So it does definitely become more of a relationship. (**FORMULATED MEANING:** FREQUENT COMMUNICATION MAY FACILITATE/IMPROVE QUALITY OF RELATIONSHIPS BETWEEN PEER AND STUDENTS WITH IDD)

I sorted this formulated meaning (FREQUENT COMMUNICATION MAY FACILITATE/IMPROVE QUALITY OF RELATIONSHIPS WITH STUDENTS WITH IDD) into the *social* theme.

Following the independent phase 2 coding of each focus group, I again calculated coding reliability between each of the three coders. Phase 2 reliability was calculated to determine the consistency with which each coder assigned formulated meanings to one of the eight, and eventual ten, themes. For example, if two coders agreed that the formulated meaning "TIME SPENT WITH STUDENT WAS STRESS RELIEVING" should be sorted into the *rewarding* theme, this would count as a single agreement. If one coder thought this formulated meaning should be sorted into *rewarding*, while another coder sorted this formulated meaning into *social*, this would count as a single disagreement. Reliability was calculated by dividing the total number of agreements by the total number of agreements plus disagreements multiplied by 100. Intercoder agreement across focus groups between me and the graduate student averaged 80.6% (range 73.7% - 91.7%), 83.1% (range 70.6% - 91.1%) between me and the undergraduate student, and 80.6% between the two students (range 66.7% - 90.0%). For all disagreements, the

three coders discussed the formulated meaning and came to consensus about the most appropriate theme in which to sort it.

Phase 3

During the third phase of coding, I further analyzed the ten emergent themes to identify distinct sub-themes. For example, under the *personal growth* theme, 13 formulated meanings related to developing patience. These 13 formulated meanings were subsequently clustered together into a new *personal growth* sub-theme, "patience." Within the same theme of *personal growth*, nine formulated meanings related to becoming more empathetic or understanding of others. These nine formulated meanings were clustered together within the *personal growth* theme to form a second sub-theme, "empathy." Each of the three coders independently clustered formulated meanings from within each of the ten themes to identify sub-themes (see Table 4 for a summary of themes, sub-themes, and sample corresponding formulated meanings).

Table 4. *Summary of Themes and Sub-Themes with Sample Formulated Meanings and Corresponding PMIS:P Items*

Theme, *sub-theme*	Sample formulated meanings	PMIS:P items
Social		
Friendship development	• Peer developed a deep bond with the student with whom she worked • Peer enjoys participating in activities with her students outside of the peer program (e.g., sporting events, playing cards) • Peer developed a friendship with the student he worked with that has lasted several years	1. I developed a strong friendship with the student(s) with disabilities whom I supported. 2. I spent/spend time with the student(s) with disabilities I supported outside of school. 3. I developed relationships with students with disabilities that will be long-lasting. 4. I developed a mutually supportive relationship with the student(s) with disabilities that I supported. 5. I developed a friendship with the student(s) with disabilities whom I supported. 6. The relationship I developed with the student(s) with disabilities I supported positively impacted my friends and family. 7. My own social network has grown in size. 8. I have found a community at school where students welcome me and make me feel included.
Sense of community	• Peer developed a sense of community with other peers involved in the peer program as well as her student • Peer found a community of students to love and be a part of • Peer enjoyed feeling included in a community at school	
Personalgrowth		
Patience	• Peer developed patience • Peer has become more patient with himself	1. I have become more patient with myself. 2. I have become more patient with others. 3. I have become more empathetic. 4. I have become more understanding of others. 5. I am a better person. 6. I am more appreciative of my life. 7. I have become more reflective. 8. I have learned how to handle my own stress better. 9. I became more organized. 10. I am less critical of myself. 11. I have become more open-minded. 12. I am a happier person. 13. I have become more confident. 14. I have become more compassionate. 15. I feel better about myself. 16. I have gained a greater sense of self-worth. 17. I have become more kind.
Empathy	• Growth in empathy and understanding for everyone • Peer developed empathy and understanding of people with disabilities	
Other intra-personal areas of growth	• Peer is more appreciative of the good things in their life • Peer increased self-worth, less critical of self • Peer has learned to be more reflective • Peer has learned to be less competitive in all situations • Peer has become more confident	

Theme, *sub-theme*	Sample formulated meanings	PMIS:P items
		18. I am proud of myself.
Changes in views		
	• Peer recognizes that knowing a disability label does not mean knowing the person with the disability • Peers have been positively surprised by the skills of students with disabilities • Peer has learned that students with disabilities are more alike than different to their other friends	1. I think people with disabilities are not that different from me. 2. I learned about the unique strengths of people with disabilities. 3. My perspective on the capabilities of people with disabilities has been positively impacted. 4. I have become more comfortable around people with disabilities. 5. I have developed high expectations for people with disabilities. 6. I recognize the misconceptions I used to have about people with disabilities. 7. My views of people with disabilities have been positively impacted. 8. I learned to see beyond disability labels 9. I have learned about different types of disabilities.
Rewarding		
Rewarded through helping others	• Peer enjoys feeling that they are making a difference • Peer enjoys being relied upon by others	1. I felt needed. 2. I felt good helping others. 3. I am more excited about going to school.
Rewarded through time with student	• Peer enjoys the positive energy provided by her student • Peer enjoys spending time with her student and finds it to be a good stress reliever from daily stress	4. I feel good knowing that I made a difference in the life of someone else. 5. I felt rewarded when I could help my student succeed.
Rewarded through seeing others succeed	• Peer has pride in the success of her student	

Theme, *sub-theme*	Sample formulated meanings	PMIS:P items
	• Peer fees rewarded in seeing her student overcome challenges	
Skills		
Communication skills	• Improved communication skills- able to communicate with a more diverse audience • Learned how to communication without using verbal language • Learned how to more effectively communicate (e.g., learned not to dominate a conversation)	1. I learned to be a better listener. 2. I improved my communication skills. 3. I learned how to more effectively communicate. 4. I feel prepared to help people with disabilities who need support. 5. I learned better time-management skills. 6. I have improved my problem-solving skills. 7. I have developed teaching/mentoring skills. 8. I learned how to set healthy personal boundaries. 9. I learned leadership skills.
De-escalation skills	• Peer has learned de-escalation strategies to support student • Peer learned skills to better handle tough situations involving students with disabilities	
Other skills	• Learned to set personal boundaries • Learned skills necessary for future job • Peer improved time-management skills	
Advocacy		
	• Peer is able to advocate and educate other students about the "R" word • Peer learned how to better advocate for students with disabilities by educating other students • More likely to challenge prejudiced language/ideas about people with disabilities • Learned to intervene in uncomfortable situations involving the students with disabilities and other general education students	1. I have become a better advocate for people with disabilities. 2. I am able to educate my friends and family about what it means to have a disability. 3. I feel like I set a positive example for others. 4. I think all students with disabilities should be more fully included throughout the school day alongside students without disabilities. 5. I have more favorable views toward inclusion. 6. I am more likely to speak up when students with disabilities are bullied, or when others use disparaging language about disability.
Future		
Future careers	• Peer wants to pursue a career in special education • Peer has “found life’s purpose” through participation in the program	1. I learned skills that will help me in my future career. 2. I am open to a career where I can support people with disabilities.
Future PMIs	• Peer wants to continue to be in peer program in high school • Peer wants to participate again in the future and continue to develop long-lasting friendships	3. I want to continue to support students with disabilities while I'm in school.

Theme, *sub-theme*	Sample formulated meanings	PMIS:P items
Better prepared for future	• Peer feels the experience of working with diverse groups of students will help in any future career • Peer thinks the experience will help in the future	
Academic		
	• Peers grades not impacted by involvement in peer program • Peer encouraged to maintain good habits to be a better role model for the student he supports • Peer could become distracted in class thinking about her student and how they were faring without her	1. I am motivated to be an academic role model for others. 2. My grades got worse.
Negative impacts		
Draining	• Mentally draining trying to keep someone else organized • Peer program can be emotionally draining and tiring, especially when students have behaviors or peer is put in challenging situations	1. I stress about the success of the student(s) I supported.
Stress about the success of students	• Peer worries about the success of her student • Peer feels responsible for the student being successful	

For formulated meanings within a theme that did not cluster to form a sub-theme, individual formulated meanings were retained. Finally, for formulated meanings that were initially sorted into the *other* theme during phase 2 coding, I reviewed each formulated meaning to determine if and where it fit within the remaining nine themes. All formulated meanings sorted into the *other* theme were re-sorted during phase 3 into one of the other nine themes.

Trustworthiness

During focus group data collection and analysis, we used several strategies to support the credibility and trustworthiness of the data (Brantlinger et al., 2005; Creswell & Poth, 2018). First, in consideration of the trustworthiness of the sampling strategy, I sampled participants purposefully using criterion sampling, an appropriate sampling method for a phenomenological study (Creswell & Poth, 2018). Second, an audit trail documented both raw data (i.e., interview dates and times, transcripts, interviewer reflection sheets) and data analysis (i.e., from all steps of coding). Third, the team reduced bias during analysis by using a team-based approach with consensus coding on discrepancies. Fourth, a faculty member with expertise in PMI provided peer debriefing and critique. Fifth, member checking was done throughout the focus group interview process by rephrasing and affirming with participants what they shared. For example, when asking peers follow-up questions I would regularly state questions as follows: "[Peer name], you shared that you felt you had developed your patience after spending time with the student whom you supported. Does anyone else feel this way or want to respond to what [peer name] shared?" Additionally, I conducted a subsequent member checking procedure through the use of a follow-up survey. This survey asked whether the information peers shared was appropriately captured (see Study 2).

Findings

All 41 peers who participated in the focus groups agreed they had been positively impacted by their involvement in a program wherein they worked with and supported students with IDD. Table 4 displays a summary of the nine themes and sub-themes with sample formulated meanings.

Theme 1: Social Impact

Across the eight focus groups, 120 formulated meanings related to a social impact. Peers developed friendships with the students with whom they worked, they communicated more frequently with these students, and they found communities within their schools that welcomed them and made them feel included.

Friendship Development

Eighty-six formulated meanings related to developing a friendship. Regardless of where peers supported students (e.g., general education classroom, at lunch or in other non-academic contexts) or their formal role as a peer (e.g., academic tutor, workout buddy, social support), peers of all ages revealed that friendship development was common when participating in a PMI. For example, in reflecting on the friendship he developed, one middle school peer who supported a student with ASD in a general education class stated, “I feel like when it first starts off, we need to help the student in class. And then you build friendships along the way.” Several peers also shared that the relationships they built with student(s) with IDD were of a unique and high quality. For example, one college peer who supported multiple students with IDD in non-academic contexts stated:

> I always try to surround myself with people that are going to, this might not be the right word, but they're going to enhance my life and make me feel better about myself and

> constantly lift me up. And I do the same to them. And that's what a lot of the students [whom I supported] were doing for my life. They're adding to my life and not taking away anything. And I just felt like it was just such a special friendship and just one that I haven't had before.

Similarly, another college peer who supported a student with an IDD multiple times a week shared:

> My relationships…my students are a lot more raw than other relationships that I have just because it's, I don't know, they're just more honest. And this is kind of a generalization—obviously it differs from person to person—but the students that I've worked with tend to be a lot more intentional with relationships. And they really value and invest in the relationships that they're making; not only with me, but also with each other.

Peers who worked with multiple students with IDD were clear in their statements related to friendship that they did not develop the same quality of relationship with every student with whom they worked. It is natural and normal to expect that peers might develop deeper relationships with some students more than others. Peers who shared similar interests or who had similar personalities with the student(s) whom they supported found it easier to develop a friendship. As noted by one college peer:

> In terms of personalities, that can kind of be a little bit of an issue. For example, this year I'm mentoring a student who has the same interests as me, and it does work out in my favor. Last year, I also had a student who had the same interests as me, but our personalities just didn't really match as well. So it was a little harder for me to have a relationship with him, but I was still able to be that support system.

Although most peers spoke of the reciprocal and mutually beneficial nature of their friendships with the students with IDD, two peers shared alternate opinions. One college peer who served as an academic tutor stated, “I find myself limiting my conversation to very PG ideas,” indicating that the relationship she had with the student whom she supported was different from her other friendships. A similar feeling was shared by a high-school aged peer

who supported students with IDD in general and special education classrooms as well as a part of a Unified Sports team. She shared:

> I feel like they do feel like a friend. Maybe not a friend that you can tell them about your problems, but they will talk to you about theirs and how their night was and how their weekend was. And it's really sweet and it makes you feel good that they trust you enough to tell you about what happened in their weekend and how their day is going and stuff like that.

This peer notes how she feels comfortable listening and providing support to the students with whom she works. However, the friendship is not entirely reciprocal in that this peer does not feel comfortable relaying the stressors in her own life to the students with IDD.

In talking about the development of their friendships, several middle and high school peers spoke about the ways their friendships were enhanced by spending time together outside of school. For example, one female middle school peer who supported four male students with ASD in a special education classroom said:

> I think that really developing a relationship just outside of the set time period that you're with them at school is super beneficial. It just makes coming to school a lot more exciting and you just have more stuff to talk about with your students.

Another high school peer who worked with a single student with ASD recognized that everyone, regardless of disability status, can behave differently in school versus outside of school. She suggested peers should take the time to get to know the students whom they support outside of school to enhance the quality of their friendship:

> I think really getting [the students] outside of the school environment, you see that they're maybe different than you thought they were. Because I think everyone's a little bit different when we're at school. For me, I'm a little bit more quiet and closed off to people that maybe aren't my friends. But I think when you get outside of school and you can... They really start to open up and stuff. So that's really cool to see.

Another important consideration to friendships is their longevity. Although friendships will naturally change over time, several peers emphasized the enduring nature of their friendship,

noting it was an indicator of the great quality of the relationship. For example, one college peer who supported a student with an IDD both in and outside of the classroom stated:

> I've had lasting friendships come out of it. Even though I'm not able to mentor this year, I still have quite a few students who—even when I'm too busy to reach out to them—will reach out to me and say, “Hey, do you want to hang out?” So that's been a great thing.

Similarly, another college-aged peer who supported multiple students at lunch or other non-instructional times said:

> [The student whom I supported] graduated. He's done. But he still lives in [the same city as me] so he calls me up. We're getting lunch next week, so yeah, these relationships definitely could last if you want them to. Because again, I feel like the students do a really good job of being intentional with relationships. You just kind of have to reciprocate that.

Sense of Community

Eleven formulated meanings related to how peers had grown their own social network and found a community of students (with and without disabilities) at school where they felt included and supported. For example, one college peer who had participated as both an academic and non-academic support reflected:

> I feel like the program has come with that unity. Because even if I don't necessarily know a specific [peer] mentor, all the [peer] mentors know that we can come to this big group that we've formed. With such a big university, I think it's great to have a little family group.

Another peer who supported students with IDD in the general education classroom, special education classroom, and other non-instructional contexts (e.g., lunch) shared about a unique program element at her high school to help peers connect with other peers.

> We also have another thing in [my school] called case conferences where we get together every month. It's nice because it just helps you realize that you have more people sharing the same experience as you. You just never feel like you're alone because there's obviously hard days with your [students]. So it's just nice to get together and talk with other people who are sharing the same experience as you.

Within their communities of support, peers have been able to make friends with other peers, learn strategies from one another, and encourage one another after challenging days.

Factors Associated with Social Impacts

There were three factors that may contribute to friendship development and forming a sense of community. First, increased communication through technology (e.g., email, texts, social media) between the peers and students with IDD may play a role in developing higher quality and longer lasting friendships. Twenty-three formulated meanings related to frequent communication. One college-aged peer who participated in a PMI for the first time during the 2019-2020 school year noted how she did not regularly socialize with the student(s) whom she supported outside of their formal time together. However, she stated that there was frequent communication between herself and the students with IDD, students whom she considered close friends.

A second factor that may contribute to social impact is the amount of time peers have participated in a peer program. The majority of peers (78.0%) who participated in the focus groups had participated in a peer program for more than one year with several peers having participated for several years. These peers, in particular, spoke about the depth and quality of their relationships. For example, one college peer who had participated in PMIs for four years shared about how one of the first students she worked with had become her best friend, “My best friend of four years is actually one of the students in the program. And he and I do everything together.” This same peer shared about the depth of other relationships she had developed with students she had worked with in the past, suggesting that she wanted them involved in a future wedding day.

> My best friend is getting married and she was having trouble coming up with a guest list. And so I was being funny and I was like, “Look how easy it is to make a guest list.” So I

> made a fake guest list for my wedding. And I was like, "Who are all the people who have impacted me that I want to be there?" I would say 98% of the students [with IDD from my peer program] were on the list of people who have crazily impacted me, and I couldn't imagine the big moments of my life without them.

A third factor that may contribute to a social impact, specifically at the college level, is the way the program is structured for peers to provide support. For example, several college peers spoke about the benefits of a support strategy called a circle of support. A circle of support involves multiple peers who support the same student with disabilities at different times throughout the day. One peer might provide in-class support, a second peer might have lunch with this same student, a third peer might provide academic tutoring for this student, and a fourth peer might accompany this student to the gym. Peers then meet regularly to discuss the student's successes and challenges and ways they as peers have been successful in supporting the student. Peers whose programs invovled a circle of support model felt that these circles were not only beneficial for the students with IDD, but for themselves. Circles of support helped the program "run smoother" and enabled the peers to feel more confident in the support they were providing. Circles of support also enabled peers to develop a greater sense of community and larger network of friends at college.

Theme 2: Personal Growth

Sixty-four formulated meanings related to peers' personal growth as a result of participating in a PMI. Areas of growth included developing patience toward themselves and others, becoming more empathetic, as well as references to other areas of intra-personal growth.

Patience

Thirteen formulated meanings related to developing patience. Peers felt that they were more patient with the student with whom they worked, with themselves, and with others. For

example, one middle school peer who supported students with IDD in a special education classroom stated:

> The biggest lesson is patience for me. I'm kind of an impatient person. I like to get things done right away and know the answer. But with [the students], I have to take a step back and take a breath and be patient. I think it's crazy for me even just working in this peer to peer program for just a few months or just a year. My patience levels have been so much better. I've just learned to take a step back and take a breath. It's okay if things take a little longer just for the sake of it being good instead of not right away. So I think patience is probably the biggest thing I've learned with this program. No matter what person I'm working with, whether it's someone older than me, younger than me, same grade, whatever. I just always been so much more patient. Even in my... I can take a step out of the peer to peer classroom and go to another class and just have that deep breath like okay, I'm good. I'm patient. I'm not just like go, go, go. It's really in all aspects of life and even in sports. Like I said, I play sports too. It's just helped me a lot in that way to make those connections and just be a better person at what I do.

Likewise, one high school peer who supported three students with ASD and/or Down syndrome said, "I have gained so much patience from this program. I was not a patient person, but from sixth grade to now, I have so much more patience than I did." Finally, one high school peer who supported a student with an ID shared how she developed more patience with her younger brothers (who do not have disabilities) as a result of her experience as a peer, "I think patience has grown. It helps with younger siblings, so you don't get as frustrated with them because their minds aren't working as fast as ours are, or they're not up to speed with you."

Empathy

Nine formulated meanings were related to becoming more empathetic and understanding. Similar to patience, empathy did not just extend to the students with whom the peers worked. Several peers felt they had become more empathetic to others generally. For example, one college peer who supported five students with IDD at lunch or other non-instructional times shared, "it's just made me a more compassionate, empathetic, understanding person for everyone

that I meet at school." Another high school peer who supported a non-verbal student with ASD in a general and special education classroom reflected,

> I think it's really made my empathy bigger too. Because sometimes when we're doing certain things, it's like you want them to be where your brain is at or where you are. And they're not there. Sometimes that can be hard. Just physically hard. Sometimes emotionally hard or just... You just want them to be at the same level and you have to realize that they're not always there. Kind of with the patient thing too, but just being more understanding that they might need some extra help and they're not always going to be on the same page as you and stuff like that.

Other Intra-Personal Areas of Growth

Across all focus groups, 42 formulated meanings related to other areas of personal growth. Peers made reference to developing pride in themselves; being less critical of themselves; feeling better about themselves; becoming more reflective, more creative, more confident, and/or more kind; learning how to find joy in challenging times; learning to be less competitive in all situations; learning how to cope with anger; improving their self-worth; and developing a deeper appreciation for life. For example, when asked if she felt proud of herself after participating in her PMI, one high school peer who supported a student with an ID responded "I would say pride is half and half. I take pride as like a thumbs up for myself not like a pride that I'm showing off to other people or like a trophy that I've won. I think it's self-pride [more] than like out in the open." When asked if she had developed greater feelings of self-worth, one college peer who supported a student with an IDD said:

> I think there has been an increase in self-worth for me. I feel like I can be hyper critical of myself sometimes, and it's nice when I'm helping other people, because then I'm thinking about them instead of thinking about myself and the things I could do better. So I think that's been a benefit for me. That's is generally a benefit I derive from serving others in any capacity, but it has been a benefit from this program.

Another high school peer who supported several students with MD shared a similar sentiment. She expressed how she had improved her overall mental health and developed her self-worth:

> I would say that being involved in [my peer program] has improved my mental health. Sometimes you can feel a little discouraged, like, "Oh, my student's not getting it." But you celebrate those little things. So I think just having those positive impacts during the day has impacted my mental health a lot. And again, self-worth. I feel like I have a purpose.

Factors Associated with Personal Growth

Two factors may be specifically associated with personal growth. First, several peers noted that their development of patience was associated with time spent with the student(s) whom they supported. This makes sense, as patience is most often developed over time rather than in a single day. Second, peers who specifically supported student(s) who did not use verbal speech to communicate seemed to have improved their communication skills. One college peer noted that it was not the program, but rather the student(s) they supported, that enabled them to experience intra-personal growth:

> I would say that the students more teach you how to communicate effectively than like the [peer program] itself. Like obviously, the [peer program] is what allows you to communicate with the students. But I feel like the students are really the ones who are like forcing you to communicate in different ways, which is like how I personally have grown.

Theme 3: Changes in Views

Fifty-two formulated meanings related to improving views of and attitudes toward individuals with disabilities. Several peers openly shared about their lack of knowledge and experience working with individuals with disabilities prior to participating in a PMI. For these peers, it was their views of individuals with IDD that seemed to have changed the most as a result of their involvement in a PMI. One college peer with no prior experience being around or interacting with individuals with IDD shared:

> Before I was involved with [the peer program], I wouldn't say I had anything against people with disabilities. It was just I didn't know how to approach them. I didn't know. I

> had never worked with anyone, met, had family members that had disabilities, and I just didn't know how to approach them, what to say to them. During the training for [the peer program] as a peer mentor, you get to learn about each student individually, what works for them, what doesn't work for them. I think that's where it started to change my views, just to see they're all people, too. They're all college students, too. They're all doing the same thing we're doing. You can approach them as college students. They're not different and socially ... I don't know how to say that exactly. But they're not that much different than we think they are growing up in elementary school. I think it has tremendously overall changed my views.

Another college-aged peer with limited experience working with individuals with disabilities and aspirations of becoming a secondary education teacher said:

> I just hadn't had a lot of experience, I guess, in relating to people with disabilities. And so I had a lot of learning to do. And I think that's made me a better person and a better teacher now, like just having that experience.

Finally, one high school peer who supported students with ASD, ID, and MD stated:

> I don't want to say like that they were stupid before, because obviously they're not stupid, but it definitely shows you that they are very intelligent and they know what they're doing. And whether they can tell you that or show you that, they still understand everything. They understand it like you do to the best of their abilities. But they're not dumb and they know what they're doing.

In addition to changing views generally, some peers spoke about increasing their expectations for individuals with disabilities. References to higher expectations were particularly common among peers who served as academic supports. For example, when asked about the ways he was impacted, one graduate student who served as an academic mentor stated, “My expectations. I think I had some real prejudice that I came into this with that I didn't know any better. And the longer I've worked with these students, the more that that gets pushed out or kicked out.”

Finally, many peers grew in their understanding of how individuals with disabilities are unique and how a disability does not define a whole person. For example, several peers came into the PMI thinking that any two students with ASD likely would learn, communicate, or

behave in the same way. Participating in a PMI helped peers to dismantle these inaccurate preconceived notions and to recognize the unique strengths and needs of each student with whom they worked. One college peer who worked with three students with IDD shared,

> I think I've learned like not every disability means a certain outcome. Because obviously when you go into this, and you don't know the disabilities, you just see different interactions. And for all you know, everyone has the same disability. For all you know, everyone has a different disability. But it's still different with each student, they're still humans and they communicate differently and have different interests and the disability doesn't make the person.

This sentiment was echoed by another high school peer who supported students with ASD, ID, and MD:

> What I've really realized is that every student is different and even only being in the program for two years…No matter if they're super independent or they need lots of help or they have struggle communicating or really like to talk and stuff like that, it's just made me realize that every single person is different.

Factors Associated with Changes in Views

Peers who received training as part of their PMI experience that specifically included information about disabilities noted how this enabled them to begin to see the unique strengths and individuality of persons with disabilities. One college peer with no prior experience supporting or working with individuals with IDD shared:

> During the training for [our program] as a peer mentor, you get to learn about each student individually, what works for them and what doesn't work for them. I think that's where it started to change my views, just to see they're all people, too.

Theme 4: Rewarding Impact

Sixty-seven formulated meanings related to feelings of being rewarded. Peers noted feelings of deep satisfaction and gratitude for their experiences and involvement in PMIs. Specifically, they spoke of experiencing satisfaction and happiness through helping others,

feeling gratitude as a result of their time spent alongside the students with IDD, and feeling joy in seeing the students with whom they worked grow and succeed.

Rewarded Through Helping Others

Twenty-seven formulated meanings related to feelings of satisfaction through helping others. Peers saw themselves as capable of helping others and felt rewarded through the experience of helping others. This sentiment was evidenced by multiple peer statements. For example, one high school peer who supported several students with MD in various academic and non-academic contexts stated, “After my hour [with the students whom I support], I always feel so good, and I feel so happy that I was able to spend time with that student and be able to help somebody.” In addition to feeling rewarded through helping others, some peers spoke of the ways in which the student whom they supported provided support in return. As evidenced by one college peer, this resulted in feelings of deep satisfaction and gratitude:

> I think a lot of times you go into it and you think, “I'm going to be mentoring a student,” right? So the mentality going in was like, “I'm going to serve these people, and it's going to be cool. I'm going to see how I make a difference in their lives and see, just encourage them in their successes and stuff.” But it kind of goes both ways a lot of times in a way you don't expect. I've been encouraged by my mentees so many times without them even probably knowing it. Just like their joy despite the struggles that they go through is so encouraging to me and inspiring for me to also kind of face my struggles with the same joy. So I think for me, it's been rewarding, because in a lot of ways that I was trying to serve them, I was served the same way back.

Rewarded Through Time with Students

Twenty-four formulated meanings related to increased happiness, feelings of satisfaction, and gratitude as a result of spending time with the students whom they supported. Peers reported feeling happy, having a great time during their PMI, looking forward to school and/or the time they would be able to spend with the student with whom they worked, having an improved day as a result of their time spent with the students with IDD, and feeling a reduction in stress in their

life. For example, one high school peer who supported students with IDD in both academic and non-academic contexts shared:

> It definitely has made my school days better because it's nice to take a break from all your normal gen ed classes and then to go work with these kids who really just love going to school. It definitely has been positive impact.

Another college peer who supported students in a variety of roles reflected on her experience working with students with IDD:

> It makes me happy. On the way to work and I see when my schedules are [for meeting with my students], it makes me really excited. I look forward to that for the rest of the day. And it definitely makes me happy. It makes me feel like I'm doing something important and I'm doing something good. And when I'm with the students, you're always smiling.

Rewarded by Seeing Others Succeed

Sixteen formulated meanings related to the joy and pride peers experienced in seeing the success and growth of the students with whom they worked. One college peer who supported eight students with ASD and/or ID shared:

> The most rewarding thing is to see the student's growth throughout their time… To see their growth from when they started to now where they are working and living on their own. It just makes me so happy. And so I think that's the most rewarding thing for me is seeing the student's growth.

Another college peer who estimated she worked with up to 60 students with IDD in a variety of roles succinctly stated, “Just to see the growth has been very rewarding.”

Theme 5: Skills Impact

Fifty-eight formulated meanings related to developing skills as a result of participating in their PMIs. Skills included communication skills, de-escalation skills, and other general skills that peers felt they could use in the future.

Communication Skills

Twenty-three formulated meanings related to improved communication skills. Peers shared that they had become better listeners, learned how to more effectively and more clearly communicate, and had become more comfortable communicating with individuals who do not use speech to communicate. For example, one college-aged peer said:

> In the future, if I see someone who's struggling, or even if someone in my family has I guess ASD, I would know how to communicate with them and not bombard them with a bunch of questions. Kind of take a step back and slowly talk to them and not approach them so fast.

Another college peer shared about her positive experiences supporting the communication needs of a student with an IDD with whom she worked:

> I feel like I became a translator a lot, but in a way where it wasn't awkward for the student to be like, “Tell them I'm saying this, because they're not understanding me.” So it was kind of a fun little challenge to try and make a circle of communication rather than a triangle of communication.

De-escalation Skills

Eleven formulated meanings related to how peers learned de-escalation skills and strategies to help students who presented with challenging behaviors. For example, a high school peer shared about a student that she supported with strong outbursts:

> Another thing I've learned is the de-escalation strategies. The boy [who I support] can get extremely violent when he is mad. He has ripped a drinking fountain off a wall. I've gotten a concussion from him. So it's learning how to deal with that on my own has been extreme. But I'm really good at deescalating situations right now.

Other Skills

Twenty-four formulated meanings related to other skill areas in which the peers grew. Improved skill areas included time management skills, the ability to draw boundaries with others, as well as general skills. For example, when speaking about how she balances her

commitment to being a peer along with other schoolwork and life responsibilities, one college peer stated:

> [Being a peer] almost whipped me into shape to be like, "You have other priorities now, too. You have other responsibilities, so you need to get your homework done." So time management, I feel like it's helped me get better at it.

Another college-aged peer shared about how she is able to transfer the skills she has learned in her PMI to support her brother with a disability at home. She stated, "I'm able to use those skills and the knowledge that I'm getting from the program to find ways to help my brother. So that's definitely amazing and I love that part of it."

Factors Associated with Skills Impacts

For some peers, familiarity with the student(s) with IDD was likely related to their knowledge of de-escalation strategies. Therefore, it would be expected that the skills impact for peers who had prior relationships with the student(s) with IDD would be lesser than for peers who were less familiar or had less experiences supporting individuals with challenging behaviors. For example, one high school peer shared how her long-term relationship and knowledge of a student equipped her to provide support during a challenging moment.

> Some of the teachers can't calm some of the students down and I've been working with her since third grade, so she knows me. One time she was having a meltdown, so I started playing Frozen on my phone and she took my phone from me and the teacher was like, "No, give it back [to the student]."And I'm like, "No, it's okay." That calmed her down. And just seeing them calm down is a nice feeling.

It is possible that this peer further developed her knowledge of de-escalation strategies as a result of her time spent in the peer program. However, it also possible that her prior knowledge of the student was associated with her ability to provide support.

Theme 6: Advocacy Impact

Thirty-five formulated meanings related to increased or improved advocacy efforts. Peers reported they had gained knowledge to become stronger advocates and/or gained the confidence to speak-up to others when they heard disparaging language about individuals with disabilities.

Twenty-one formulated meanings related specifically to growing in one's desire and ability to become stronger advocates in their communities. For example, one college student was inspired by seeing how well the student with whom she worked advocated for herself. This made the peer want to become a stronger advocate:

> …these students are some of the biggest advocates for themselves, which is so important especially in college. And they're all learning so much. Working so hard. And it just inspires me and has made me want to be a bigger advocate for our students with disabilities after seeing how hard they work.

Several peers mentioned that while they have a positive view of students with IDD, not everyone in their school or community is as accepting of individuals with disabilities. Ten peers described ways in which they had talked to other students and staff to advocate for students with IDD in an attempt to shift attitudes. For example, one peer shared how she had confronted other students at her high school who were making inappropriate statements about students with disabilities:

> A big thing for me is that I've become a better advocate. Not just for my students—like at the school and speaking with other students—but just in general. Because you grow such strong relationships with the students. Like they're not just mentees. Like a lot of them, like you're friends with them. So if you hear any certain language or like preconceptions about students with disabilities, I feel like I'm more likely to say, "Hey, I really don't like that." Or even just, "Where are you coming from? Where'd you get this idea?""

Similarly, a college-aged peer shared how she spoke with a faculty member at her college after a medical lecture that focused entirely on the deficits rather than strengths of individuals with ASD:

> I have had to have hard conversations with my professors in the past because of the way that they were showcasing autism or something like that. I had to have the conversation

> about, “You're only showing the negative sides of things and everybody has bad days. And that's not fair for you to highlight a whole group of individuals just by their bad days.” And reasons like that. I've been able to help change curriculum slightly to a more positive outlook.

Finally, four peers spoke about educating their families about disabilities as a form of advocacy and several more talked more generally about their new passion for disability rights.

Factors Associated with Advocacy Impacts

The age of peers may be a factor associated with an advocacy impact on peers. Several peers noted that bullying and inappropriate language such as the use of the R-word were more prevalent in middle school, improving as students got older. For example, one middle school peer stated:

> I think in middle school, I think a lot of people think it's funny to make fun of people for their disabilities. I think it really impacted me because to some level when I hear that stuff, I think to say something right to them.

If peers were exposed to more instances in which they felt they needed to be an advocate at a younger age, it is possible that an advocacy impact was larger for younger students.

Theme 7: Future Impact

Twenty-four formulated meanings related to how peers’ experiences in a PMI positively impacted their future plans and pursuits. Peers spoke about the ways in which their experiences affected their interest in future college majors or careers, their desires to participate in future PMIs, and well as general references to how PMIs better prepared them for their futures.

Future Careers

Eighteen formulated meanings related specifically to how peers’ involvement in a PMI impacted their plans for a future career or future college major. Peers ranging from middle school-aged to college-aged spoke about these changes. For example, several peers said that they

had become interested in supporting individuals with disabilities as part of their future career as a result of their peer experience. Some peers even referred to this career pursuit as their "calling" or their "purpose in life." As one high school peer stated, "[The peer program] impacted me enough to [influence] the career I want to go into. Helping me figure out what I want to do in the future. And it gives me a purpose in life, like, I found my purpose." Another middle school peer who supported three students with ASD and/or an ID shared a similar sentiment:

> Working with them just always brings a smile to my face every single day. It's actually made me decide I want to go into special education for something to do with my life. So yeah. I mean, it's impacted me pretty big I'd say.

Some high school- and college-aged peers anticipated entering the field of special education prior to their participation in their peer programs. Moreover, the PMI strengthened their resolve. For example, one high school peer said:

> I'm actually going to [name of college] for special education. Growing up with special needs people, I've always had a piece of that in my heart, and then the whole [peer] program, that just set it all on fire…I really enjoy it.

Future PMIs

Three formulated meanings related to wanting to continue to participate in a PMI in the future. In all three instances, the peers were not asked if they wanted to continue their participation specifically. Instead, they spontaneously shared that they wanted to continue to participate. For example, one middle school peer stated:

> I most definitely want to do it in high school. But at my school, because of the fact that in ninth grade there's a lot of classes you're required to take, it's not common for freshmen to end up being able to do [the peer program]. The last three years of high school, I definitely want to do it, and in freshman year if I'm able to.

Another college freshman had participated in peer programs in high school, but she was new to the peer mentoring roles in her college program. She shared, "There's this impact for the students

but there's also a really big impact for the mentors. And so, me being new, I definitely will continue to do this because it does socially make me feel very whole and happy."

Better Prepared for Future

Not all peers were interested in a future career or college major focused on supporting individuals with disabilities. However, three peers recognized that their experiences in peer programs better prepared them for any future. For example, one high school student who had participated in a PMI for several years reflected,

> But for the future, because I've had multiple different students and you get a variety of backgrounds, so then you'll have a good background of understanding when later in life if you need to talk to somebody that has special needs, or they need help, like in a store, or somewhere, I feel like I'd be able to help them a lot better after this program.

This sentiment was echoed by another high school student who reported that his interest in a career in aviation had not changed as a result of his participation in a PMI. However, he recognized his experience could still benefit him in the future: "It really doesn't affect anything with my job, but it also helps me for the future and [I] can always remember how to help them if I ever need to." Finally, one middle school peer shared how she was not interested in a career in education, but she felt better prepared to support individuals with disabilities no matter her future career pursuits:

> I personally don't really want to go into special education or even education in general. But I feel like this program has really helped me work with different kinds of people, which I feel can help [me] no matter what I choose for my career. I'm not really sure what I want to do yet. But I just know I'll be more prepared if I do end up working with people with disabilities or if I am a doctor and I have patients like that. I feel like it really will help me even if I don't specialize in [working with people with disabilities] or not. But I feel like it really can impact my career in a better way just because I have more experience working with a bunch of different kinds of people.

Factors Associated with Future Impacts

Peers who supported and worked with students with IDD in academic capacities (i.e., supporting students in the general education classroom in middle school or high school, or supporting students as an academic tutor, daily planning support, or in-class support in college) may have developed stronger teaching/mentoring skills, along with other skills for future employment. For all peers who indicated they were interested in pursuing a college major or career related to supporting individuals with disabilities, it is likely that serving in an academic role specifically helped foster skills they would use in their future employment. For example, one college-aged peer who was pursuing a degree in secondary English education recognized the skills she had garnered as an academic tutor could help all her future students, regardless of their disability status.

Theme 8: Academic Impact

Fifteen formulated meanings related to academics. Thirteen of these formulated meanings revealed that peer grades and academic engagement were not impacted at all. Several of the students shared that they were high-achieving students prior to their participation in a PMI, they remained so throughout the duration of their PMI experience, and continued to be so when the PMI concluded. As succinctly explained by one peer and echoed by many others, “my academics haven't really been affected.”

Some middle and high school peers were required to maintain a particular grade point average to remain in their PMI. These peers were particularly motivated to maintain their academic status. As one high school peer shared, “At our school, if we don't have good enough grades, then we get taken out of the program.” Several peers additionally noted that they were

motivated to achieve academic success and maintain good academic habits to be role models for the students with whom they worked. For example, one high school student shared,

> I think it almost makes you try to set your goals a little higher, so then you can be a role model for them. Like if you show them that, for example, I use a planner to keep myself organized, and if showing them that maybe a planner would work for them, and help them to keep their schoolwork organized. I think just really trying to set a goal and be a role model for them.

Only two peers spoke of challenges with maintaining their academic standing. One peer who supported a student with ASD in a general education class admitted that she sometimes had trouble concentrating in her own classes because she found herself worrying about the student whom she supported. She shared:

> Sometimes it's hard for me to focus on classes, because I'm thinking about my [student] and, like, what's he doing? Is he okay right now? Especially because I have my fourth hour when he has his lunch. I know lunch hasn't been the easiest thing for him lately.

Moreover, a middle school student shared about a time several years earlier when she had trouble maintaining her grades while supporting a student with an IDD.

> There was a time when I was still in elementary [school], I was in fourth grade. I let my social studies grade slip and it was just a C, so it wasn't that bad. But my teacher looked at me, he goes, “Hey, I'm going to take you out [of the peer program] if you don't get this grade up.” I got my grade up. But I'd definitely say it does impact [my academics]. Because you're so focused on trying to make sure [the student is] doing good and they're going to get good grades. And then you forget about yourself.

Theme 9: Negative Impact

Thirty-three formulated meanings revealed negative impacts for peers. Across all focus groups, there were two common negative impacts experienced by peers that crossed all grade levels. First, peers felt participating in their PMIs could be mentally and emotionally draining. Second, peers experienced stress related to wanting the students whom they supported to be successful.

Draining

Nineteen formulated meanings related to the negative emotional/mental toll of being a peer. For example, a college-aged peer who supported multiple students with IDD as both an academic and non-academic support shared:

> Not only is it tiring to put in the hours work of it, but the emotional work of having to always be on guard. Because we're not only just helping them with their schoolwork and stuff like that. We're always mirroring proper responses to things and how we should handle that. And so it's tiring sometimes to always be mirroring and have to always try to think out for yourself beforehand and how that will impact other people.

Feelings of being emotionally drained were particularly true among peers who worked with students with challenging behaviors. Peers shared that they sometimes felt unsafe or stressed when asked to support a student whom they did not feel equipped to help during challenging moment. Moreover, one middle school peer who supported three students with ASD and/or ID reflected about the ways the emotional stress of supporting students with challenging behaviors was impacting her relationships at home. She stated:

> When I get home, I'm just emotionally drained because of the day that I had. I have a little brother—not really little, we're 18 months apart—and I lose it with him; especially right after school. I guess when I say emotionally drained, I just mean, when I am with [students] or something, I bottle up my emotions because I don't want to take it out on them or anything. So when I get home, it's like, they all just come out.

Stress About the Success of Students

Twelve formulated meanings related to being stressed about the success of the students they supported. This was particularly true for peers who served in academic support roles. For example, one college-aged academic tutor stated:

> We kind of know what the student's week looks like, in terms of the academic load and also like the events that they need to be physically present at. So that sometimes gave me extra things to worry about, especially for students that I know are not, they're struggling to get some deadlines or get assignments due in the right time. Then I, throughout the week, I'm thinking about how much they have work. I'm constantly checking up on them

> to make sure that they're actually making progress in their assignments. So I think it just adds like extra thing for me to worry about, personally.

One high school peer also shared about how the success, or lack of success, of the student whom she supported could have negative effects on her own mental health and confidence as an academic support. She shared:

> For me, personally, I feel like it's an on again-off again kind of an ordeal. Because some days I make a lot of progress with my [student] and it goes really well. But then other days he'll freak out and it'll be kind of like nerve wracking, my confidence will go down in helping him.

Factors Associated with Negative Impacts

Two factors may be associated with negative impacts: peer role and behavior of student with an IDD. First, peers who supported students academically seem more likely to be impacted negatively. These peers spoke more frequently about feelings of stress related to the success of the student(s) with whom they worked. As one college-aged peer shared:

> [The program coordinators] did mention that our role as a tutor is just like a supplement. We're not responsible for student's good grades or completion. We're just giving, being like an extra hand to look over their assignments. So [the coordinators are] telling us to not feel too obligated to take that much responsibility on the student's work. But I think it's just who I am, honestly. I just want to make sure that they're getting everything done.

Second, middle and high school peers who supported students with challenging behavior may have experienced more negative outcomes. These students more frequently spoke about feeling drained, emotionally exhausted, and/or stressed when put in situations where they were not sure they took the right action. One high school peer recounted a time when she was successfully able to help a student, but questioned how things would have gone if the situation had not resulted positively:

> [The student] was trying really hard just to keep his cool and just stay calm. But you could tell he was struggling with it. He threw something down on the table. He's like, “I don't like that kid.” I was like, “Okay.” I said, “Do you need a break?” He said yeah, so he took a break. Then afterwards everything went great. He calmed down, I distanced

myself and all that kind of stuff. I didn't have anything to contact a teacher with... I didn't have anything. No teachers around. So then going back and saying, what would I have done? I don't know if I would have been prepared to... If it had escalated.

Chapter II

Study 2: Developing and Testing the PMIS:P: Exploring the Ways in Which Peers who Participate in PMIs are Impacted by Their Involvement

The purpose of Study 2 was to explore the extent to which peers agreed with having experienced the range of impacts identified in Study 1. Using the findings of Study 1, and the work of prior literature reviews related to peer impact (Carter & McCabe, 2021; Travers & Carter, 2021), I developed a new, content valid measurement tool that captures the breadth of ways peers may be impacted by their involvement in PMI. In this descriptive study, I addressed the following research question:

1. To what extent do peers agree with having experienced the range of impact areas?

Method

Recruitment

I invited each of the 41 peers who participated in the Study 1 focus groups to take a follow-up survey. All peers met the same inclusion criteria. Specifically, they: (a) had participated in a PMI (e.g., peer network, peer support arrangement, peer buddy program, peer mentorship program, Unified Sports team) in the United States during the 2019-2020 school year alongside at least one student with an IDD; (b) had completed 6th grade and were a student (middle school, high school, post-secondary) while involved in the PMI; (c) spoke English as a primary language; and (d) had access to a computer/phone/tablet/iPad. Each peer received an

email explaining the purpose of the survey. I told peers how long it would take to complete the survey (about 15 min) and that compensation ($10 gift card) would be provided for survey completion. Up to three reminder emails mirrored the initial email.

Participants and PMIs

Participants included 39 middle school, high school, and post-secondary peers who had participated in a PMI wherein they worked with a student with an IDD. The majority of peers (84.6%, *n* = 33) was female, 15.4% (*n* = 6) were male. Most participants identified as White/non-Hispanic (87.2%, *n* = 34). Additional demographic and background information for peers (e.g., prior experience with individuals with IDD) are displayed in Table 1.

Each peer provided information about the student(s) with IDD with whom they worked and supported. Two-thirds of participating peers (66.7%) reported that at least one of the students with whom they worked had ASD, 51.3% reported ID, 38.5% reported MD, 33.3% reported Down syndrome, and 7.7% reported another type of disability (e.g., cerebral palsy). Eleven peers (28.2%) indicated that they did not know the disability of at least one of the students with whom they worked. Peers also reported the gender, school level, and race/ethnicity of the students. This information is displayed in Table 2.

Peers indicated all of the ways they worked with or supported student(s) with IDD as part of their program. Most peers (74.4%) spent time with these students at lunch or during other non-structured times during the day, 64.1% spent time with student(s) in a general education class, 56.4% spent time with student(s) in a special education classroom, 18.0% spent time with student(s) with IDD as part of a Unified Sports team, and 10.3% spent time with student(s) with

IDD as part of a Best Buddies club. When asked specifically about the locations where peers spent time working with students, 69.2% reported spending time in multiple locations.

Instrument

To examine how peers were impacted by their experiences, I created a measurement tool called the *Peer-Mediated Impact Survey for Peers* (PMIS:P). The PMIS:P consisted of 63 items addressing a variety of ways in which peers may have been impacted by their involvement in a PMI.

Development of the PMIS:P

To develop the PMIS:P items, I first reviewed the nine themes and sub-themes identified in Study 1 (see Table 4 for a list of themes and sub-themes). Using this information, I crafted PMIS:P items that aligned with each theme/sub-theme. For example, one of the themes identified in Study 1 was *social*. Under the theme, *social,* I identified two sub-themes: *friendship development* and *supportive community*. For each of these sub-themes, I created survey items that aligned with the sub-themes. Examples included: "I developed a strong friendship with the student(s) with disabilities whom I supported" (friendship development) and "I have found a community at school where students welcome me and make me feel included" (supportive community). A list of all PMIS:P items and their corresponding themes and sub-themes from Study 1 are displayed in Table 4. Next, I developed survey items related to areas of impact identified in two systematic reviews—one by Travers and Carter (2021) focused on secondary students and one by Carter and McCabe (2021) focused on post-secondary students—that did not surface during the Study 1 focus groups. Sample PMIS:P items generated from these two prior

reviews include: “I think all students with disabilities should be more fully included throughout the school day alongside students without disabilities” and “I learned leadership skills.”

Completing the PMIS:P

Peers completed the PMIS:P online using REDCap (Harris et al., 2009). I provided peers with video and text instructions on how to complete the PMIS:P. These instructions informed peers that the purpose of the survey was to make sure the research team accurately captured what they had shared in the focus groups with regard to the ways they were impacted by their PMI experiences. To do this, I asked peers to read each of the 63 PMIS:P statements beginning with the phrase “Because of my experience in a peer program…”. This stem prompted peers to think about the ways they had changed as a result of their involvement in a PMI. For example, the item “I developed a strong friendship with the student(s) with disabilities whom I supported” was read “Because of my experience in a peer program, I developed a strong friendship with the student(s) with disabilities whom I supported.” I asked peers to rate the degree to which they agreed with each statement using a 4-point, Likert-type scale: 1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, 4 = *strongly agree*. If a PMIS:P item did not make sense, I asked peers to select a fifth response option: *I don’t understand the statement*. I required peers to respond to each of the 63 PMIS:P items.

After rating each of the 63 items, two optional open-ended items asked peers to provide feedback about (1) any other areas of impact or benefits they received from participating as a peer in their peer program, and (2) how to better phrase survey items that they considered to be confusing.

Data Analysis

Once all invited peers had completed their surveys or informed declined participation, I exported all data from REDCap (Harris et al., 2009). This resulted in 39 completed surveys. I used descriptive statistics to answer my research question: To what extent do peers report having experienced the range of impact areas? I calculated the means and standard deviations for each of the 63 items, as well as the entire PMIS:P tool. I also computed a total impact rating per peer based on the number of PMIS:P item with which peers *agreed* or *strongly agreed*. I was interested in exploring the number of impact items peers agreed they experienced.

Results

Descriptive statistics for item-level ratings are reported in Table 5.

Table 5. *Peer Ratings of Impact on PMIS:P (Study 2)*

Survey item by category	# of peers selecting each response: Strongly disagree (1)	Disagree (2)	Agree (3)	Strongly agree (4)	*M (SD)*	Missing
PMIS:P					3.48 (0.26)	
Social						
I developed a friendship with the student(s) with disabilities whom I supported.	0	1	10	28	3.69 (0.52)	0
I developed a strong friendship with the student(s) with disabilities whom I supported.	0	1	14	24	3.59 (0.55)	0
I have found a community at school where students welcome me and make me feel included.	0	3	14	21	3.47 (0.65)	1
I developed a mutually supportive relationship with the student(s) with disabilities that I supported.	0	3	14	21	3.47 (0.65)	1
The relationship I developed with the student(s) with disabilities I supported positively impacted my friends and family.	0	4	15	19	3.39 (0.68)	1
I talked with someone I wouldn't normally talk to.	0	4	16	19	3.38 (0.67)	0
I spent/spend time with the student(s) with disabilities I supported outside of school.	1	4	14	20	3.36 (0.78)	0
I developed relationships with students with disabilities that will be long-lasting.	1	4	14	20	3.36 (0.78)	0
My own social network has grown in size.	0	3	20	15	3.32 (0.62)	1
I have connected with my student(s) with disabilities frequently via social media, email, phone calls, or texts.	1	2	23	12	3.21 (0.66)	1
Personal growth						
I am a better person.	0	0	13	26	3.67 (0.48)	0
I have become more understanding of others.	0	1	14	24	3.59 (0.55)	0
I have become more open-minded.	0	1	14	24	3.59 (0.55)	0
I have become more empathetic.	0	0	16	22	3.58 (0.50)	1
I am more appreciative of my life.	0	2	13	24	3.56 (0.60)	0
I have become more compassionate.	0	0	18	21	3.54 (0.51)	0
I have become more patient with others.	0	2	14	23	3.54 (0.60)	0
I am a happier person.	0	3	16	20	3.44 (0.64)	0
I am proud of myself.	0	3	18	17	3.37 (0.63)	1
I feel better about myself.	0	3	20	16	3.33 (0.62)	0
I have become more confident.	1	3	17	18	3.33 (0.74)	0
I have become more kind.	0	3	22	14	3.28 (0.60)	0
I have become more reflective.	0	0	28	10	3.26 (0.45)	1
I have gained a greater sense of self-worth.	0	4	21	14	3.26 (0.64)	0
I have become more patient with myself.	0	9	14	15	3.16 (0.79)	1

I became more organized.	1	9	23	6	2.87 (0.70)	0
I have learned how to handle my own stress better.	0	13	20	6	2.82 (0.68)	0
I am less critical of myself.	3	11	19	5	2.68 (0.81)	1
Improved attitudes						
I learned to see beyond disability labels.	0	0	4	34	3.89 (0.31)	1
I have become more comfortable around people with disabilities.	0	0	5	32	3.86 (0.35)	2
My perspective on the capabilities of people with disabilities has been positively impacted.	0	0	10	28	3.74 (0.45)	1
My views of people with disabilities have been positively impacted.	0	0	11	28	3.72 (0.46)	0
I learned about the unique strengths of people with disabilities.	0	0	11	28	3.72 (0.46)	0
I think people with disabilities are not that different from me.	0	0	14	25	3.64 (0.49)	0
I recognize the misconceptions I used to have about people with disabilities.	0	1	17	20	3.50 (0.56)	1
I have learned about different types of disabilities.	0	4	13	21	3.45 (0.69)	1
I have developed high expectations for people with disabilities.	1	8	21	8	2.95 (0.73)	1
Rewarding						
I felt good helping others.	0	0	8	31	3.79 (0.41)	0
I felt rewarded when I could help my student succeed.	0	0	12	27	3.69 (0.47)	0
I feel good knowing that I made a difference in the life of someone else.	0	1	11	27	3.67 (0.53)	0
I felt needed.	0	2	15	22	3.51 (0.60)	0
I am more excited about going to school.	0	3	15	21	3.46 (0.64)	0
Skills						
I learned to be a better listener.	0	0	6	33	3.85 (0.37)	0
I feel prepared to help people with disabilities who need support.	0	1	11	27	3.67 (0.53)	0
I have developed teaching/mentoring skills.	0	1	11	27	3.67 (0.53)	0
I improved my communication skills.	0	1	14	24	3.59 (0.55)	0
I learned how to more effectively communicate.	0	1	15	23	3.56 (0.55)	0
I learned leadership skills.	0	2	15	22	3.51 (0.60)	0
I learned how to set healthy personal boundaries.	0	3	19	17	3.36 (0.63)	0
I have improved my problem-solving skills.	1	3	18	17	3.31 (0.73)	0
I learned better time-management skills.	1	8	17	13	3.08 (0.81)	0
Advocacy						
I am more likely to speak up when students with disabilities are bullied, or when others use disparaging language about disability.	0	0	10	29	3.74 (0.44)	0
I have more favorable views toward inclusion.	0	0	12	25	3.68 (0.47)	2
I am able to educate my friends and family about what it means to have a disability.	0	1	12	26	3.64 (0.54)	0
I have become a better advocate for people with disabilities.	0	1	14	24	3.59 (0.55)	0
I feel like I set a positive example for others.	0	1	14	24	3.59 (0.55)	0

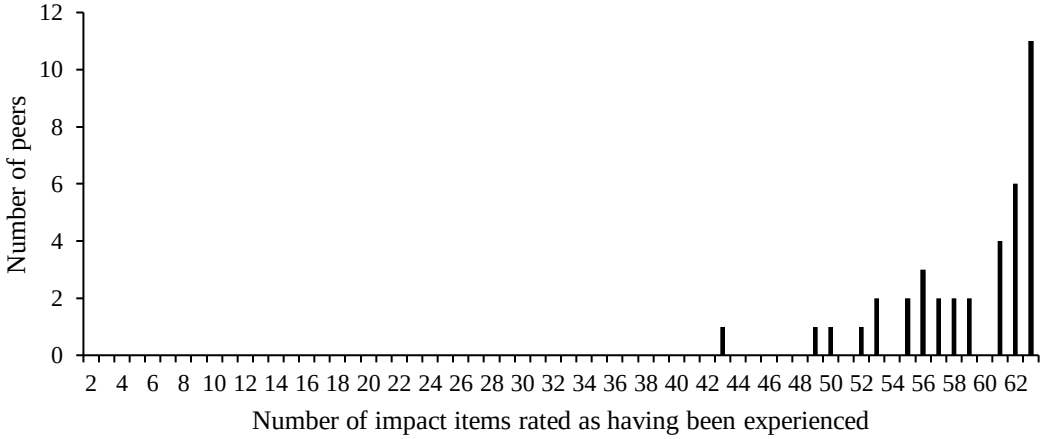
I think all students with disabilities should be more fully included throughout the school day alongside students without disabilities.	0	1	18	20	3.49 (0.56)	0
Future						
I learned skills that will help me in my future career.	0	0	9	30	3.77 (0.43)	0
I want to continue to support students with disabilities while I'm in school.	0	1	10	28	3.69 (0.52)	0
I am open to a career where I can support people with disabilities.	0	2	13	24	3.56 (0.60)	0
Academic						
My grades got worse. (reverse coded)	0	0	7	32	3.82 (0.39)	0
I am motivated to be an academic role model for others.	0	1	14	24	3.59 (0.55)	0
Negative impact						
I stress about the success of the student(s) I supported.	0	8	24	7	2.97 (0.63)	0

Overall, peers reported having experienced a wide range of positive impacts as indicated by their positive ratings on each of the items on the PMIS:P. There were 17 PMIS:P items for which no peer selected a disagreement response option. This indicates all peers agreed with having experienced these impact items. Moreover, for 58 of the 63 PMIS:P items, average peer ratings were greater than 3 indicating the majority of peers agreed or strongly agreed with the almost all survey item.

The three PMIS:P items with the highest mean ratings were "I learned to see beyond disability labels" (*M* = 3.89, *SD* = 0.31), "I have become more comfortable around people with disabilities" (*M* = 3.86, *SD* = 0.35), and "I learned to be a better listener" (*M* = 3.85, *SD* = 0.37). The three PMIS:P items with the lowest mean ratings were "I am less critical of myself" (*M* = 2.68, *SD* = 0.81), "I have learned how to handle my own stress better" (*M* = 2.82, *SD* = 0.68), and "I became more organized" (*M* = 2.87, *SD* = 0.70).

I calculated the number of items rated as *agree* or *strongly agree* for each peer participant to assess the total number of items peers agreed with having experienced. The average number of items with which peers agreed was 58.2 out of 63 items (range: 42-63, *Mdn* = 61; see Figure 1).

Figure 1. *Number of Different PMIS:P Items Rated as Having Been Experienced by Peers (Study 2)*



Chapter III

Study 3: Understanding the Impact of PMI on Secondary and Post-Secondary Peers who Participate in PMI

The purpose of Study 3 was to refine and validate the PMIS:P to understand how peers are impacted by their experiences in PMIs. First, I conducted an exploratory factor analysis to determine the underlying constructs related to peer impact. I then used descriptive analyses to examine the ways in which peers agreed with having experienced a range of impact areas. Finally, I explored what peer- and intervention-related variables may be associated with higher mean PMIS:P ratings and higher mean PMIS:P factor ratings. I address the following research questions:

1. What is the factor structure of the PMIS:P?
2. What is the internal consistency and test-retest reliability of the PMIS:P?
3. To what extent do peers agree with having experienced the range of impact areas?
4. What peer- and intervention-related variables are associated with mean PMIS:P ratings?

Method

Recruitment

To recruit peers, I first emailed nine low-incidence consultants for state regional education cooperatives; one project director for a state-wide peer partner program; two state-level Unified Sports directors; 30 educators and administrators from Tennessee, Kentucky, and

Arizona who had experience with supporting, supervising, or managing PMI and peer programs involving students with and without IDD at the middle or high school level; 25 Best Buddies state directors, as well as the Best Buddies Director of National programs; and 215 individuals in leadership positions associated with each inclusive higher education program in the United States. In the initial email, I asked to speak with them about the purpose of the study, the inclusion criteria, and what I would share back after the study. When necessary, I asked them to connect me with the person (e.g., school-level peer program coordinator, teacher, peer program supervisor) who would be able to send a recruitment email to either the parents/guardians of peers or directly to the peers (when 18 years of age or older) on my behalf. I was able to connect with: four low-incidence consultants for state regional education cooperatives; one project director for a state-wide peer partner program; one state-level Unified Sports director; six educators and administrators from Tennessee, Kentucky, and Arizona; 17 Best Buddies state directors, as well as the Best Buddies Director of National programs; and 20 individuals in leadership positions associated with inclusive higher education programs across the United States. With the help of the recruitment partners, my recruitment email was reportedly shared with over 15,000 parents and over 2,000 peers who were 18 years of age of older.

The recruitment email to parents/guardians/peers (18 years of age or older) included information about the study and a link to my electronic consent form. If a parent/guardian provided consent for their child to participate, I emailed their child with information about the study and a link to an electronic assent form.

Participants and PMIs

Participants included 277 peers who supported and worked with at least one student with an IDD during the 2019-2020 school year while enrolled as a middle school, high school, or college-aged student. Peer grade level ranged from 7th to graduated college (*Mdn* = high school senior); the median age of peers was 18. Of the 277 participants, 236 identified as female (85.2%), 36 (13.0%) as male, 3 (1.1%) as other, and 2 (0.7%) preferred not to say. The majority was white, non-Hispanic (82.3%). Only 4.7% of peers indicated they had a disability. Peers from 25 different states participated in this study. States with the largest representation included California (71 peers), Maryland (48 peers), and Michigan (35 peers). The majority (76.9%) of peers had prior experience with individuals with IDD. Additional peer demographic information (i.e., race/ethnicity, disability status, type of prior experience with individuals with IDD) is displayed in Table 1.

Peers reported working with an average of five students with IDD (range: 0-80, *Mdn* = 2) as part of their PMI experience. Thirteen peers (4.7%) did not report the number of students with whom they worked. About half (47.3%) of peers were paired to work with one student with an IDD, 36.5% were paired with multiple students, and 13.4% were not assigned to work with any particular student(s), but rather were on the same team or in the same group. Each peer provided information about the students with whom they worked and supported (whether specifically paired or not). Over half (54.5%) of peers worked with at least one student with ASD, 49.1% worked with at least one student with an ID, 41.2% worked with at least one student with Down syndrome, 33.9% worked with at least one student with MD, and 5.1% worked with students with an additional, other disability. About one quarter of peers (28.2%) did not know the disability of at least one of the students with whom they worked. Despite not knowing the

disability label of some of the students with whom they worked, given the recruitment partners and the nature of the programs from which peers were recruited, all peers met inclusion criteria. The majority (72.9%) of peers worked with at least one male student with an IDD, and 67.9% worked with at least one female student. Three peers (1.1%) preferred not to report this information. Eighty-seven peers (31.4%) had prior familiarity with at least one of the students with whom they worked. Additional demographic information about the students with whom peers worked and supported (i.e., grade, race/ethnicity, communication mode, peer prior knowledge of the student(s) with IDD with whom they worked) is displayed in Table 2.

Over half (56.3%) of the peers participated in Best Buddies and 10.8% participated on a Unified Sports team. At the middle school and high school levels, peers reported all the contexts in which they worked with and supported students with IDD. Most peers (36.1%) supported at least one student during lunch or other non-instructional times of the day, 18.8% supported at least one student outside of school, 18.4% supported at least one student in a special education classroom, 13.0% supported at least one student in a general education classroom, and 1.8% supported at least one student in another context not listed. Of the students who indicated they supported a student in a general education class, 61.1% supported at least one student in a core academic class, 41.7% supported at least one student in a related arts class, and 25.0% supported at least one student in another type of general education class.

At the college level, peers reported assuming a host of formal roles to support students with IDD. Over one quarter (26.4%) of peers were a social inclusion support, 23.8% were an academic support or tutor, 13.0% were an in-class support, 11.2% were a mealtime support, 7.9% were an exercise support, 7.6% were a daily planning tutor, 7.2% were a work or internship

support, 1.8% were a roommate or other residential life support, and 2.5% assumed another formal support role not listed. Peers were not limited to reporting a single support role.

The amount of time peers reported working with students with IDD during their PMI experience varied. Most peers (38.6%) worked with the student(s) a few times a week or once a week (27.8%), 13.0% reported once a day, 9.4% reported multiple times a week, and 9.4% reported once every few weeks. Five peers (1.8%) did not report on the frequency with which they worked with students with IDD. Most peers (71.5%) reported their PMI program lasted one school year, 24.5% reported their program lasted about a semester and 0.4% reported their program lasted less than a semester. Ten peers (3.6%) did not report the duration of their PMI program. Finally, peers reported the number of years they had participated in a PMI program: 9.4% had participated for less than one year, 8.3% for about one year, 30.7% for one to two years, 24.5% for two to three years and 26.7% for more than 3 years. One peer (0.4%) did not report information related to the length of time they had been involved in PMIs.

Peers reported the ways in which they were recruited to participate. For middle/high school peers: 44.8% were recruited by a friend who had already participated in the PMI, 37.9% volunteered after seeing a flyer for the program at school, 33.8% volunteered after someone made an announcement about the program in one of their classes, 25.5% were recruited by a friend who planned to participate and wanted to participate together, 16.6% were recruited by a special education teacher, 9.0% were recruited by a general education teacher, 2.8% were recruited by a school staff member (not a teacher or a paraprofessional), 1.1% of peers do not remember how they were recruited, and 11.7% were recruited in other ways (e.g., saw a video about the PMI online, founded Best Buddies club at school, a family member recommended participation). For college peers: 37.1% volunteered after seeing a flyer on campus, 25.0% were

recruited by a friend who had already participated as a peer, 16.7% chose to attend their college or university because of the opportunities to support students with IDD enrolled in an IHE program, 15.2% were recruited by a PMI program staff member, 9.1% were recruited by a friend who planned to participate and wanted to participate together, 7.6% were recruited by a professor not involved in the peer program, 2.3% of peers do not remember how they were recruited, and 10.6% were recruited in other ways (e.g., a student with disabilities encouraged the peer to volunteer, received an email about the program, required as part of a college course).

About half (52.0%) of peers received some training prior to participating in their PMI. Peers reported being provided one or more of the following: a verbal description of the PMI (43.3%); an explanation of the purpose of the PMI (43.0%); information related to disabilities generally, or about the student(s) with IDD with whom they worked (39.6%); opportunities to ask questions (38.3%); a written description of the PMI (35.7%); adult modeling of how to provide support to the student(s) with IDD (18.4%); a video model (17.0%); instructions on how to collect data on the student(s) with IDD (15.2%), an opportunity to practice or implement the PMI (9.7%); and/or some other information or guidance (0.7%). Two peers (0.7%) could not remember the type of training they received. More than three-quarters of peers (78.7%) reported they received ongoing support or assistance from an adult during their PMI.

Instrument

I asked peers to complete a single survey containing four unique sections addressing (a) information about themselves, (b) information about the student(s) with whom they worked and supported, (c) information about the PMI they participated in, and (d) the ways in which they may have been impacted from their PMI experiences. The instrument was piloted in Study 2 with

39 peers. After piloting the measure, I made minor revisions to survey items and general formatting of the first three sections of the measure (i.e., demographic information about the peers and the students with whom the peers worked and supported, information about the PMI). More substantive revisions were made to survey items in the fourth section (i.e., peer impact). These revisions are detailed below under the subheading *Refinement of the PMIS:P*.

Demographics of Peers

I asked peers to report their current age and grade, the state they were from, their gender, and their race/ethnicity (see Table 1). I asked peers if they identified as someone with a disability. If they said yes, I asked about their disability label (i.e., learning disability, speech or language impairment, hearing impairment, deaf, visual impairment/blind, other health impairment, emotional disturbance, orthopedic impairment, ASD spectrum disorder, ID, other, prefer not to say). Disability label options were not mutually exclusive. I also asked peers if they had prior experience(s) with people with IDD prior to participating in the PMI. If they said yes, I asked them to describe that prior experience (i.e., family member with IDD; a friend with IDD; on a sports team with someone with IDD; in a class with someone with IDD but didn't interact often; in a class with someone with IDD and interacted often; previous participation in a PMI with a student with an IDD; other). More than one type of experience could be selected.

Demographics of Students with IDD

I asked peers if they were paired with one student with an IDD; multiple students with IDD; if they were not paired with any students with IDD but were on the same team or in the same group; or other. I then asked peers to indicate how many students with IDD they supported during the 2019-2020 school year. I instructed the peers to answer all the questions in this second section of the measure about either the single student with an IDD whom they supported, or to

select all applicable responses for all the students with IDD whom they supported. I asked the peers to report the type of disability (i.e., Down syndrome, ASD, ID, MD, other, I don't know), grade, gender, race, and ethnicity of the student(s) whom they supported. I asked peers to report all of the ways the student(s) whom they supported communicated (i.e., verbally, with pictures, with manual signs, with gestures, with a communication device, other). Finally, I asked peers if they knew the student(s) whom they supported before participating in the PMI. If they said yes, I asked in what capacity (i.e., shared a class and interacted often; shared a class, but did not interact often; knew the student(s) from school, but did not share any classes; on a sports team together; attended the same place of worship; in a school club together; other). Response options for prior familiarity with the student(s) were not mutually exclusive.

Characteristics of PMIs

All peers were asked if they participated in Best Buddies, Unified Sports, or Links/zLinks (i.e. a state-wide peer partner program in Michigan). Peers could select more than one response option or select: I did not participate in any of these programs. Peers who indicated they were in college were asked to describe their role as a peer by checking all responses options that applied (i.e., academic support/tutor, daily planning support, mealtime support, social inclusion support, in-class support, work/internship support, exercise support, roommate of other residential life support, other formal support role). College peer support roles were identified by Carter & McCabe (2021) and were not mutually exclusive. I also asked college-aged peers to indicate all the ways they were recruited to participate (i.e., a program staff asked me to participate, a professor not involved with the peer program asked me to participate, a friend who had already participated in the peer program recommended I participate, a friend who was going to participate in the peer program asked me to participate too, I volunteered after seeing a flyer

posted on campus, I chose to attend my college because I knew a peer program was available and I voluntarily signed up to participate, other, I don't remember). Recruitment response options were not mutually exclusive.

Peers who indicated they were in middle school or high school were asked about the contexts in which they worked and supported students with IDD during their PMI (i.e., supported a student with an IDD in a general education class, supported a student with an IDD in a special education class, supported a student with an IDD during lunch or other non-instructional times, supported a student with an IDD outside of school, peer support on the same non-school sports team, other). If peers indicated they supported a student(s) with an IDD in a general education class, they were asked if the class was a core academic class, a related arts class, or other. Middle and high school peers were also asked how they were recruited to participate (i.e., a general education teacher asked me to participate, a special education teacher asked me to participate, a paraprofessional asked me to participate, another school staff asked me to participate, a friend who had participated in the PMI before recommended I participate, a friend who was going to participate in the PMI asked me to participate, I volunteered after seeing a flyer posted at school, I volunteered after someone made an announcement about the peer program in class, other, I don't remember). Recruitment response options were not mutually exclusive.

I asked all peers, regardless of grade level, if they were provided with training prior to their PMI. If they indicated yes, I asked them to report the ways in which they were provided training prior to supporting a student(s) with IDD. Peers could select multiple responses among the following options: a verbal description of the PMI; provided with information related to disabilities generally, or about the specific student(s) you supported; a written description of the PMI; an explanation of the purpose of the PMI and/or your role as a peer; an opportunity to

practice implementing the PMI; an adult modeled how to provide support to the student(s) with IDD you supported; a video model was provided; provided opportunities to ask questions; provided with instructions for how to collect data on the student(s) with IDD you supported; other; I don't remember. I also asked peers if they were provided with ongoing help or assistance from an adult during their peer program (i.e., yes, no, I don't remember).

Finally, I asked peers about the duration of their experience. I asked them how often they worked with or supported student(s) with IDD during their PMI (i.e., multiple times a day, once a day, a few times a week, once a week, once every few weeks, other), how long their peer program typically lasts (i.e., less than a semester, about a semester, one school year, other), and how many years they had participated in any PMI (i.e., less than 1 year, about 1 year, 1-2 years, 2-3 years, more than 3 years).

Peer Impact

To understand the ways peers felt they were impacted by their experiences in PMIs, I refined and administered the *Peer-Mediated Intervention Survey for Peers* (PMIS:P) developed in Study 2. Using the findings from Study 2, I refined the PMIS:P measure to reduce redundancy between items and improve item clarity.

Refinement of the PMIS:P. The PMIS:P asks peers to indicate the degree to which they agree or disagree with a list of items related to peer impact. Each item begins with the same stem phrase, "Because of my experience in a peer program…". Although the original measure asked peers to respond on a 4-point Likert-type scale, the results of Study 2 indicated this was not a large enough scale and impacted the measurements ability for precision (Simms et al., 2019). Therefore, my first step in refining the PMI was to increase the response options to a 6-point

Likert-type scale: 1 = *strongly disagree*, 2 = *disagree*, 3 = *somewhat disagree*, 4= *somewhat agree*, 5 = *agree*, 6 = *strongly agree*.

Next, I reduced the number of items on the PMIS:P from 63 to 50 to make the tool more efficient. I looked at the original 63 items and when two or more items were similar in scope (e.g., "I developed a strong friendship with the student(s) with disabilities whom I supported" (M = 3.59, SD = 0.55) and "I developed a friendship with the student(s) with disabilities whom I supported" (M = 3.69, SD = 0.52), and the means and standard deviations between the two items were similar, I removed the item(s) with the lower mean agreement(s) among peers. I also removed items that I no longer felt focused on peer impact (e.g., "The relationship I developed with the student(s) with disabilities I supported positively impacted my friends and family"). Finally, I removed items that peers rated with the highest levels of disagreement (e.g., 25.6% of peers disagreed or strongly disagreed with the item "I have become more organized"). After removing items, I edited the language of several items for consistency and clarity between items. For example, two items that read "I have become more reflective" and "I have become more open-minded" in the original version of the PMIS:P were edited to, "I am more reflective" and "I am more open-minded" on the updated version of the PMIS:P.

Procedures

I placed the survey online using the secure web-based platform REDCap (Harris et al., 2009). I provided peers with video and text instructions related to the four survey sections. Given the COVID-19 pandemic, many peers had to participate in their PMIs virtually during part of their 2019-2020 and 2020-2021 school years. Because virtual PMI experiences may impact peers differently than in-person experiences, I asked peers to think about their typical, in-person, peer

program experience when rating items. If peers were unable to meet in-person for their PMI during the current (2020-2021) school year, I asked them to think back to their 2019-2020 in-person experience when answering the survey questions. Finally, peers were told that completed responses would be eligible for entry in a gift card lottery for one of thirty $20 gift cards.

PMIS:P Procedures

I provided separate video and text instructions for completing the final section of the PMIS:P. I told peers they would see a series of statements beginning with the same stem phrase, "Because of my experience in a peer program…". They should read each statement by beginning with the stem phase and then rate the degree to which they agree or disagree. I specifically told peers we were interested in the ways in which they had changed from their PMI experience. If, for example, they felt that they were patient prior to their experience and their patience had neither increased nor decreased after having participated in their peer program, they should select one of the disagreement response options. If instead they felt that their patience has changed as a result of their involvement in a peer program, they should select one of the agreement response options. Responses were required for each item on the PMIS:P.

At the end of the survey, I included two optional, open-ended response items. I asked peers to provide feedback about any ways in which they feel they had changed for the worse because of their experience in a peer program (e.g., I became a worse listener, I am less patient). I also provided space for peers to share any remaining thoughts related to the ways they were impacted by their experience in a peer program.

Data Analysis

Exploratory Factor Analysis

To answer research question one, I conducted an exploratory factor analysis using principal axis factoring to explore the construct validity of the PMIS:P tool. Because the PMIS:P was new and I was interested in exploring the relationships between variables, exploratory factor analysis was more appropriate than confirmatory factor analysis (Finch, 2020). To determine the number of factors to extract, I used three primary procedures. First, I looked at the number of Eigen values exceeding 1 (Fabrigar & Wegener, 2012). Second, I examined the scree plot (Cattell, 1966). Third, I ran a Parallel Analysis (Horn, 1965) using 100 replications of Monte Carlo simulations with datasets of the same size. I also used my own conceptual knowledge of peer impact and the findings of Study 1 to inform the number of factors I would retain.

To aid in interpretation of my factors I determined that I would rotate them. I first used an orthogonal, Varimax rotation with Kaiser Normalization (Kaiser, 1958) to explore the degree of correlation between the factors and variables. Tabachnick and Fidell (2013) recommend a cut value of 0.32 for identifying interfactor correlations that are sufficiently large to warrant the use of an oblique solution. Given the large interfactor correlations I obtained, I instead used an oblique, Promax rotation with Kaiser Normalization (Hendrickson & White, 1964) with kappa set to 4. After rotating my factors, I set a cut-off point for factor loadings of 0.30 (Tabachnick & Fidell, 2013).

Tests of Reliability

To answer research question two, I examined the reliability of the PMIS:P in two ways. First, I assessed the internal consistency of the tool by calculating Cronbach's alpha for the entire measure, as well as each of the identified factors. Second, I asked 265 peers to complete the

PMIS:P measure (section four of the survey) a second time, at least two weeks after they had completed the PMIS:P as part of the initial, four-section survey. I then calculated test-retest reliability in three ways. Frist, I examined the correlation between mean PMIS:P ratings at the two time points. I also analyzed the correlation between mean PMIS:P factor ratings at each time point. Statistically significant correlations between time points would indicate a high degree of measure stability. Second, I calculated the overall percentage of exact match agreements for each participant. To do this, I first calculated for how many PMIS:P items a peer selected the exact same rating at both time points. For example, if a participant rated the item "I felt needed" as *agree* at both time points, this would be considered one exact match agreement. I calculated the percentage of exact match agreements by dividing the number of exact match agreements per participant by 46 (the total number of items on the PMIS:P) and multiplied by 100. Third, I calculated the percentage of match agreements. If a peer selected *somewhat agree, agree*, or *strongly agreed* at both time points this would be a counted as a match agreement. Similarly, if a peer selected *somewhat disagree, disagree*, or *strongly disagree* at both time points this would be counted as a match agreement. I added the total number of match agreements, divided by 46 (the total number of items on the PMIS:P) and multiplied by 100.

Descriptive Analyses

To answer research question three, I examined peer responses on the PMIS:P using means and standard deviations. Specifically, I summarized mean ratings on the PMIS:P measure across peers by individual item, by factor, and by the full measure.

Assessing Comparisons and Correlations

To answer research question four, I explored the degree to which pre-selected peer- and intervention-related variables were associated with mean ratings on the full PMIS:P measure. All

variables considered for analyses were selected *a priori* based on prior literature reviews exploring peer impact (Carter & McCabe, 2021; Travers & Carter, 2021) and the results of Study 1. If, and only if, a variable was found to be significantly related to differences in mean PMIS:P ratings, I also explored the degree to which the selected peer- or intervention-related variable was associated with differences in mean ratings on each of the PMIS:P factors.

Comparisons. I used the PMIS:P mean ratings to run independent samples *t* tests to examine the extent to which mean PMIS:P ratings differed based on nine dichotomous variables: if the peer had prior experience with people with IDD, if the peer had prior experience with the student(s) with IDD whom they supported, if the peer supported at least one student with an ID, if the peer supported at least one student with ASD, if the peer supported at least one student who is non-verbal (i.e., does not use verbal speech to communicate), if the peer received training prior to implementing the PMI, and if the peer received ongoing support and assistance from an adult during their PMI experience. I also ran two independent samples *t* tests with smaller samples of participants. I assessed if middle and high school peers who supported students in general education classrooms had significantly higher mean PMIS:P ratings than middle and high school peers who did not support students in the general education classroom context. Finally, I examined if college-aged peers who provided academic support to students with IDD (i.e., academic tutor, daily planning tutor, or in-class support) had significantly higher mean PMIS:P ratings than college peers who did not provide academic support.

Correlations. I calculated Spearman's rank-order correlations between the mean PMIS:P ratings and ordinal variables of interest. In particular, I examined the correlation between mean PMIS:P ratings and the frequency with which peers provided support to students (i.e., once a week, once a day, multiple times a week, once every few weeks), the typical duration of the

PMIs (i.e., less than a semester, about one semester, one school year), and the length of time peers have been involved in any PMI (i.e., less than 1 year, about 1 year, 1-2 years, 2-3 years, more than 3 years). I also calculated a Pearson correlation coefficient to examine the strength of associations between mean PMIS:P ratings and age of peers.

Results

Results of Exploratory Analysis

The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.937 and the Bartlett's Test of Sphericity was significant (χ^2 = 7628.66, *df* =1035, p <.001). Both of these measures indicated that the data were appropriate for factor analysis (Dziuban & Shirkey, 1974). Inspection of the eigenvalues greater than 1 suggested a nine factor solution. Further inspection of the scree plot of the eigenvalues did not provide strong evidence of a departure from linearity coinciding with a particular factor solution. Both assessments revealed that the items of the PMIS:P were highly correlated unidimensionally. As a final statistical test, I ran a Parallel Analysis (Hayton et al., 2004) to assist in determining the appropriate number of factors to retain. Results of the Parallel Analysis were not helpful and suggested I retain more than 20 factors.

I decided to use the results of the eigenvalues greater than 1 test to assess how items loaded on each of nine factors. It was immediately clear than a nine factor solution did not make sense conceptually as only one item loaded on the eighth factor and no items loaded on the ninth factor (pre-rotation). Using the results of Study 1, I instead opted to extract eight factors representative of eight of the identified impact themes. Given the large interfactor correlations I

obtained from my data, I used an oblique, Promax rotation with Kaiser Normalization (Hendrickson & White, 1964) with kappa set to 4 with a cut-off point for factor loading of 0.30 (Tabachnick & Fidell, 2007). In looking at the eight factor solution, one PMIS:P item, "I feel better prepared to help people with disabilities in the future" did not load on any factors. This item was removed from the PMIS:P measure. Further, only two items, "My grades got worse," and "I developed higher expectations for the student(s) with disabilities whom I supported" loaded uniquely onto factor eight. As factor eight only accounted for 1.43% of the total PMIS:P variance and the two items did not conceptually make sense to be grouped together, I dropped both items from the PMIS:P measure. With the removal of these two items, there was no longer an eighth factor and so I re-ran my analysis a final time, retaining only seven factors. In re-running the analysis, a final item (I am a better person) was removed from the PMIS:P as it no longer loaded on any factor. The final seven factor solution accounted for 53.92% of the total measure variance explained. The resulting factor solution makes sense conceptually and is supported by the findings in Study 1 and prior literature reviews. The resulting seven factors and the items included in each are displayed in Table 6.

Table 6. *Factor Analysis for PMIS:P Ratings*

Survey item by factor	Factor loadings						
	1	2	3	4	5	6	7
Factor 1: Skill and intra-personal development							
I improved my problem-solving skills.	.857						
My conflict management skills improved.	.798						
My communication skills improved.	.698						
I learned how to communicate more effectively.	.650						
I am more open-minded.	.594						
I am more patient with others.	.591						
I am more patient with myself.	.541	.324					
My time-management skills improved.	.511	.432					
I am more reflective.	.479	.348					
I am a better listener.	.478						
My leadership skills improved.	.393						
I am more excited about going to school (or I'm more excited about being at this college).	.318						.314
Factor 2: Self-worth impact							
I gained a greater sense of self-worth.		.946					
I feel better about myself.		.748					
My overall mental health improved.		.724					
I am more confident.		.671					
I am more appreciative of life.		.590					.303
I am better at setting healthy personal boundaries.	.429	.455					
I felt needed.		.387					
I am more kind.		.320					
Factor 3: Changes in views							
I recognize the misconceptions I used to have about people with disabilities.			.878				
I learned to see beyond disability labels.			.850				
My views of people with disabilities have been positively impacted.			.688				
I have more favorable views toward inclusion.			.554				
I talked with someone I would not normally talk to.			.515				
I learned that each individual with disabilities possesses unique strengths.	.330		.446				
I think that people with disabilities are more similar to me than different.			.417	.366			
I am more compassionate.	.339		.350				
I am more understanding of others.			.319				
Factor 4: Social impact							
I developed a friendship with the student(s) with disabilities whom I supported.				.757			
I spent/spend time with the student(s) with disabilities I supported outside of my peer program.				.700			

	Factor loadings						
Survey item by factor	1	2	3	4	5	6	7
I developed relationships with students with disabilities that will be long-lasting.				.665			
I found a community of students at school who welcome me and make me feel included.				.586			
I want to continue to support students with disabilities while I am still in school.				.419			
I am more open to a career where I can support people with disabilities				.404			
Factor 5: Advocacy impact							
I am more likely to speak up when others use disparaging language about disability.					1.037		
I am more likely to speak up when students with disabilities are bullied.					.845		
I am more comfortable around people with disabilities.					.419		
I am a better advocate for people with disabilities.					.373		
Factor 6: Rewarding impact							
It felt rewarding to help the student(s) with disabilities whom I supported to succeed.						.953	
I felt good helping others.						.824	
I feel good knowing that I made a difference in the life of someone else.						.430	
Factor 7: Future impact							
I learned skills that will help me in my future career.							.703
I developed stronger teaching/mentoring skills.	.333						.574
I am more motivated to be a role model for others.							.398
I am better able to educate my friends and family about what it means to have a disability.					.389		.396

The seven factors were named in accordance with the categories identified in Study 1. Eleven items cross loaded on two factors, therefore simple structure was not obtained (Hendrickson & White, 1964). Each item was assigned to the factor with the strongest loading. See Table 6 for factor loading values by PMIS:P item.

Reliability

Cronbach's alpha coefficient for the overall PMIS:P measure was .96. It was also high for each of the seven factors: skill and intra-personal development ($\alpha = .91$), self-worth impact ($\alpha = .89$), changes in views ($\alpha = .84$), social impact ($\alpha = .82$), advocacy impact ($\alpha = .79$), rewarding impact ($\alpha = .79$), and future impact ($\alpha = .77$).

More than half of the peers (57.8%) participated in the retest measure. The correlation between time-points on the entire PMIS:P measure was strong and positive, as were each of the correlations for the seven PMIS:P factors (see Table 7).

Table 7. *Correlation Coefficients for Test-Retest Reliability*

	N = 160	
	r	*p*
Mean PMIS:P	.79	<.001
Self-worth impact	.78	<.001
Skill and intra-personal development	.78	<.001
Changes in views	.66	<.001
Social impact	.82	<.001
Advocacy impact	.50	<.001
Rewarding impact	.66	<.001
Future impact	.58	<.001

Percentage of exact match agreements averaged 58.1% per participant (range: 4.3%-100.0%). Percentage of match agreements (i.e., agreed with an item at both time points or disagreed with an item at both time points) averaged 94.7% (range: 41.3%- 100.0%).

Results of Descriptive Analyses

Means and standard deviations for PMIS:P item ratings, factor ratings, and total PMIS:P ratings are reported in Table 8.

Table 8. *Peer Ratings of Impact on PMIS:P (Study 3)*

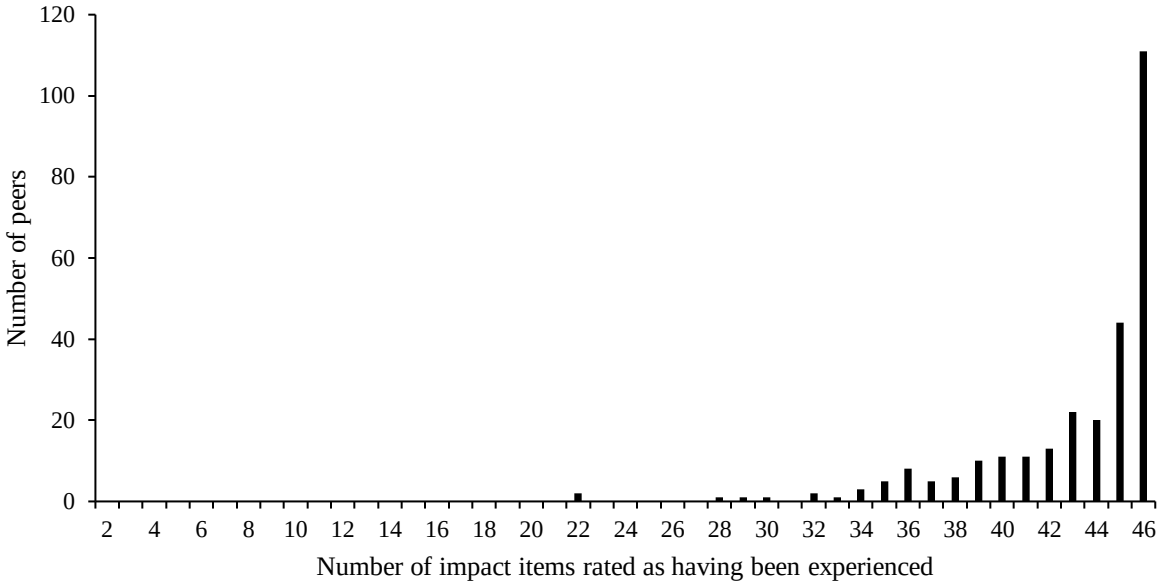
	% of peers selecting each response						
Survey item by factor	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Somewhat agree (4)	Agree (5)	Strongly agree (6)	*M (SD)*
Total PMIS:P							**5.17 (0.54)**
Factor 5: Advocacy impact							**5.57 (0.55)**
I am more likely to speak up when students with disabilities are bullied.	0.0	0.7	0.4	3.6	21.7	73.6	5.67 (0.63)
I am more likely to speak up when others use disparaging language about disability.	0.0	0.7	0.0	7.2	23.8	68.2	5.59 (0.69)
I am more comfortable around people with disabilities.	0.0	1.1	1.4	4.7	22.7	70.0	5.59 (0.74)
I am a better advocate for people with disabilities.	0.0	0.0	1.4	9.0	34.3	55.2	5.43 (0.72)
Factor 6: Rewarding impact							**5.56 (0.55)**
I felt good helping others.	0.0	0.0	0.0	6.9	22.4	70.8	5.64 (0.61)
It felt rewarding to help the student(s) with disabilities whom I supported to succeed.	0.0	0.0	0.4	7.6	27.8	64.3	5.56 (0.65)
I feel good knowing that I made a difference in the life of someone else.	0.0	0.0	0.7	9.4	31.0	58.8	5.48 (0.70)
Factor 7: Future impact							**5.44 (0.59)**
I learned skills that will help me in my future career.	0.0	0.4	1.1	8.3	23.1	67.1	5.56 (0.72)
I am better able to educate my friends and family about what it means to have a disability.	0.0	0.0	1.4	12.3	27.8	58.5	5.43 (0.76)
I am more motivated to be a role model for others.	0.0	0.4	1.1	11.6	30.3	56.7	5.42 (0.77)
I developed stronger teaching/mentoring skills.	0.0	0.4	2.9	9.7	34.7	52.3	5.36 (0.80)
Factor 3: Changes in views							**5.37 (0.55)**
I learned that each individual with disabilities possesses unique strengths.	0.0	0.0	1.4	5.8	23.8	69.0	5.60 (0.67)
My views of people with disabilities have been positively impacted.	0.0	0.4	0.7	4.7	29.2	65.0	5.58 (0.65)
I have more favorable views toward inclusion.	0.0	0.4	1.8	7.6	26.4	63.9	5.52 (0.75)
I learned to see beyond disability labels.	0.0	1.1	1.4	7.6	28.2	61.7	5.48 (0.79)
I think that people with disabilities are more similar to me than different.	0.0	0.0	2.9	9.0	32.5	55.6	5.41 (0.77)
I am more understanding of others.	0.0	0.0	1.4	7.6	44.8	46.2	5.36 (0.69)
I am more compassionate.	0.0	0.7	2.2	13.4	27.2	46.6	5.27 (0.83)
I talked with someone I would not normally talk to.	0.7	3.2	5.8	12.6	27.8	49.8	5.13 (1.12)
I recognize the misconceptions I used to have about people with disabilities.	0.4	3.6	6.1	15.2	36.1	38.6	4.99 (1.08)

Survey item by factor	% of peers selecting each response						
	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Somewhat agree (4)	Agree (5)	Strongly agree (6)	*M (SD)*
Factor 4: Social impact							**5.15 (0.75)**
I want to continue to support students with disabilities while I am still in school.	0.0	0.4	0.7	1.8	25.3	71.8	5.68 (0.59)
I developed a friendship with the student(s) with disabilities whom I supported.	0.0	1.1	1.1	7.6	26.0	64.3	5.51 (0.77)
I am more open to a career where I can support people with disabilities	0.7	2.2	2.9	15.9	26.0	52.3	5.21 (1.03)
I found a community of students at school who welcome me and make me feel included.	0.4	2.2	4.0	20.2	33.9	39.4	5.03 (1.01)
I developed relationships with students with disabilities that will be long-lasting.	1.4	2.5	4.7	19.9	27.4	44.0	5.01 (1.14)
I spent/spend time with the student(s) with disabilities I supported outside of my peer program.	4.3	10.5	8.3	20.9	25.6	30.3	4.44 (1.48)
Factor 2: Skill and intra-personal development							**4.98 (0.70)**
I am more patient with others.	0.0	0.4	1.4	11.2	36.1	50.9	5.36 (0.77)
I learned how to communicate more effectively.	0.0	0.7	2.2	11.2	39.4	46.6	5.29 (0.81)
My communication skills improved.	0.0	0.4	3.6	12.3	37.9	45.8	5.25 (0.84)
I am more open-minded.	0.0	0.7	1.1	15.2	40.1	43.0	5.23 (0.80)
My leadership skills improved.	0.0	1.1	3.6	4.7	19.5	53.8	5.21 (0.90)
I am a better listener.	0.0	1.1	2.9	17.0	45.8	33.2	5.07 (0.84)
I am more excited about going to school (or I'm more excited about being at this college).	0.7	2.5	4.7	20.2	28.2	59.9	5.00 (1.07)
My conflict management skills improved.	0.4	3.6	6.9	24.2	33.6	68.6	4.81 (1.09)
I improved my problem-solving skills.	0.0	3.2	7.9	22.0	40.1	26.7	4.79 (1.03)
I am more reflective.	0.0	0.4	2.9	10.1	30.7	27.8	4.67 (1.10)
I am more patient with myself.	1.4	4.0	7.9	26.4	33.2	27.1	4.67 (1.16)
My time-management skills improved.	1.1	8.7	11.6	31.4	23.1	24.2	4.39 (1.27)
Factor 1: Self-worth impact							**4.77 (0.81)**
I am more kind.	0.4	1.4	3.6	16.6	39.0	39.0	5.09 (0.94)
I am more appreciative of life.	0.0	1.1	5.1	22.0	30.3	41.5	5.06 (0.97)
I felt needed.	0.0	2.5	9.4	19.5	32.1	36.5	4.91 (1.08)
I feel better about myself.	0.0	4.3	5.1	27.8	33.6	29.2	4.78 (1.06)
I gained a greater sense of self-worth.	0.4	4.3	9.4	27.4	34.7	23.8	4.63 (1.10)
I am better at setting healthy personal boundaries.	0.4	5.1	12.3	20.9	36.5	24.9	4.63 (1.15)
I am more confident.	0.7	5.1	6.5	31.8	32.9	23.1	4.60 (1.11)
My overall mental health improved.	0.7	6.5	10.5	32.5	27.8	22.0	4.46 (1.18)

Overall, peers reported having been impacted in a wide range of ways as indicated by the large average ratings across items and factors. Factor five, advocacy, had the highest overall mean rating (*M* = 5.57, *SD* = 0.54) followed by factor six, rewarding impact (*M* = 5.56, *SD* = 0.55); factor seven, future impact (*M* = 5.44, *SD* = 0.59); factor three, changes in views (*M* = 5.37, *SD* = 0.55); factor four, social impact (*M* = 5.15, *SD* = 0.75); factor two, skill and intra-personal development, (*M* = 4.98, *SD* = 0.70); and factor one, self-worth impact (*M* = 4.77, *SD* = 0.81). Looking at the item level, the three items with the highest mean ratings were "I want to continue to support students with disabilities while I am still in school" (*M* = 5.68, *SD* = 0.59), "I am more likely to speak up when students with disabilities are bullied" (*M* = 5.67, *SD* = 0.63), and "I felt good helping others" (*M* = 5.64, *SD* = 0.61). Conversely, the three items with the lowest average ratings were "My time-management skills improved" (*M* = 4.39, *SD* = 1.27), "I spent/spend time with the student(s) with disabilities I supported outside of my peer program" (*M* = 4.44, *SD* = 1.48), and "My overall mental health improved" (*M* = 4.46, *SD* = 1.18).

I calculated the number of items rated as *somewhat agree*, *agree,* or *strongly agree* for each peer participant to determine the total number of items peers agreed they had experienced as a result of participating in a PMI. Using this definition, all peers agreed with at least one PMIS:P item indicating they were impacted in at least one way. The number of items peers agreed with averaged 43.1 out of 46 (range: 22-46, *Mdn* = 45) indicating most peers were impacted in multiple ways (see Figure 2).

Figure 2. *Number of Different PMIS:P Items Rated as Having Been Experienced by Peers (Study 3)*



Results of Comparative and Correlational Analyses

Four dichotomous peer- and intervention-related variables were significantly associated with higher average PMIS:P ratings. There was a significant effect for supporting at least one student with ASD ($t(275) = 2.74$, $p = .007$, $d = 0.33$). Peers who supported and worked with at least one student with ASD reported significantly higher mean PMIS:P ratings ($M = 5.25$, SD = 0.51) than peers who did not support a student with ASD ($M = 5.07$, $SD = 0.56$). Further, peers who supported at least one student with ASD reported significantly higher mean ratings on each of the following PMIS:P factors: social impact ($t(235.83) = 3.15$, $p = .002$, $d = 0.39$), changes in views ($t(241.14) = 2.50$, $p = .013$, $d = 0.31$), skill and intra-personal development ($t(275) = 2.62$, $p = .009$, $d = 0.32$), and advocacy impact ($t(275) = 2.11$, $p = .036$, $d = 0.26$).

There was a significant effect for supporting at least one student who does not use verbal speech to communicate, ($t(275) = 2.52$, $p = .012$, $d = 0.31$). Peers who supported a non-verbal student reported higher mean PMIS:P ratings ($M = 5.27$, $SD = 0.49$) than peers who did not ($M =$

5.10, *SD* = 0.57). At the factor level, peers who supported at least one non-verbal student had significantly higher mean ratings on each of the following factors: changes in views (*t*(275) = 2.64, *p* = .009, *d* = 0.32), skill and intrapersonal development (*t*(275) = 2.26, *p* = .025, *d* = 0.28), advocacy impact (*t*(275) = 2.13, *p* = .034, *d* = 0.26), and rewarding impact (*t*(275) = 2.19, *p* = .029, *d* = 0.27).

There was a significant effect for peers who received ongoing support from an adult throughout their PMI experience (*t*(263) = 2.52, *p* = .025, *d* = 0.36). Peers who received ongoing support reported significantly higher mean PMIS:P ratings (*M* = 5.21, *SD* = 0.54) than peers who did not (*M* = 5.01, *SD* = 0.55). At the factor level, peers who received ongoing support reported significantly higher mean ratings on each of the following factors: social impact (*t*(263) = 2.58, *p* = .010, *d* = 0.42), changes in views (*t*(263) = 2.16, *p* = .032, *d* = 0.35), and future impact (*t*(263) = 2.09, *p* = .037; *d* = 0.34).

There was a significant effect for peers who had prior familiarity with the students with whom they worked (*t*(275) = 2.06, *p* = .040, *d* = 0.27). Peers who had prior familiarity reported higher mean PMIS:P ratings (*M* = 5.27, *SD* = 0.51) than peers who did not (*M* = 5.13, *SD* = 0.55). In addition, peers who had prior familiarity with the students with whom they worked reported higher ratings on each of the following factors: social impact (*t*(230.08) = 3.58, *p* < .001, *d* = 0.41), advocacy impact (*t*(217.53) = 2.07, *p* = .040, *d* = 0.24), and future impact (*t*(202.17) = 2.66, *p* = .008, *d* = 0.32).

Mean PMIS:P ratings were not significantly higher for peers who: had prior experience with people with IDD, supported at least one student with ID, or received training prior to their PMI. Similarly, mean PMIS:P ratings were not significantly higher for middle and high school peers who supported at least one student in a general education classroom or for college peers

who worked with students in an academic support role (i.e., as an academic tutor, daily planning tutor, in-class support).

Two ordinal peer- and intervention-related variables were significantly correlated with higher PMIS:P ratings. The correlation between spending more frequent time with a student with an IDD during the PMI and mean PMIS:P ratings was significant and positive (ρ = .18, p = .003). At the factor level, peers who supported a student with an IDD more frequently during their PMI had higher mean ratings on each of the following PMIS:P factors: social impact ($\rho = .30, p < .001$), skills impact (ρ = .16, p = .009), advocacy impact (ρ = .15, p = .015), and future impact ($\rho = .16$, p = .007).

Similarly, the correlation between participating in a PMI for more years and PMIS:P ratings was significant and positive ($\rho = .16$, p = .008). At the factor level, peers who spent more years in PMIs had significantly higher mean ratings on the social impact (ρ = .25, p < .001), skills impact ($\rho = .15$, p = .016), and future impact (ρ = .15, p = .013) factors.

Age of the peer and length of PMI experience (i.e., less than a semester, about a semester, about one year) were not significantly correlated with mean PMIS:P ratings. Findings from correlational analyses involving ordinal or continuous variables are displayed in Table 9.

Table 9. *Correlation Matrix for Study Variables*

	Variable	1	2	3	4	5
1	PMIS:P average ratings	-				
2	Age of peer	-.05	-			
3	Frequency of contact in PMI	.18**	.08	-		
4	Length of typical program	.02	.14*	.21**	-	
5	Number of years in any PMI	.16**	.16*	.01	.04	-

*p < .05;
**p < .01.

Chapter 5: Discussion

Given the common use of PMIs to support the social lives of students with IDD at the middle school, high school, and post-secondary level, it is important to understand how peers who are involved in these interventions are impacted by their experiences. These three studies collectively explored the nature of peer impact—the factors that underlie peer impact—and the ways in which peers are impacted by their experiences in PMIs. These studies have six main findings.

First, adolescent peers who participate in PMIs alongside students with IDD are positively impacted in a range of ways. For example, average ratings for all PMIS:P items were above four (*somewhat agree*) indicating average agreement with each impact item. Also, on average, peers rated 33 of the 46 PMIS:P items as *agree* or *strongly agree*. Finally, the median number of impacts peers agreed with was 45. These ratings all indicate there is no single way in which a peer can expect to be impacted. Rather, there are a host of potential positive outcomes. As peers make up the majority of students involved in these interventions (Travers & Carter, under review), it is important to know that they are benefitting from their involvement. Further, recognizing that peers are positively impacted reflects the reciprocity inherent in these interventions. These studies confirm that PMIs can be transformative experiences for all students involved.

Second, peer impact may not represent a single construct. Findings from the factor analysis suggest there are seven categorical ways in which peers are impacted by their experiences. These ways include skill and intrapersonal development, self-worth impact, changes in views, social impact, advocacy impact, rewarding impact, and future impact. In a prior review,

Schaefer et al. (2016) found that researchers that measure peer behavior separately from the behavior of students with ID exclusively target social and academic outcomes. These are undoubtedly important areas for consideration. Indeed, social impact was found to be one of the seven underlying factors of peer impact. However, the results of the present three studies suggest there are other areas of impact that are equally important to consider when measuring outcomes for peers. As each of the 46 items on the PMIS:P accounts for an almost equal amount of total measure variance, each item on the tool is individually important to consider when measuring peer impact. Further, each item reflects a somewhat unique way in which peers may be impacted from their experiences. Researchers and teachers should continue to use observational techniques and collect permanent products to document changes in social interaction, academic engagement, and/or changes in peer grades. However, by also administering the PMIS:P, researchers and educators can now document all of the other unique ways in which peers are impacted as a result of their participation in PMIs.

Third, advocacy impacts are particularly important to attend to. Peers reported the highest mean impact ratings on the advocacy impact factor. Peers felt that they were more likely to speak up when students with disabilities were bullied or when others use disparaging language about disability. This finding supports the conclusions of recent reviews: PMIs and peer-mediated strategies generally can be an effective part of multi-component interventions aimed at reducing bullying of students with ASD (Gao, 2020; Mavropoulou et al., 2020). Although it is promising that peers feel their ability and desire to advocate for others has been positively impacted as a result of their involvement in a PMI, confirmation of these ratings in the form of observed behavioral changes is needed. Researchers who implement PMI should ask teachers and other school staff to informally note observed changes in peer behavior or demonstrated instances of

advocacy related to bullying. Documenting behavioral changes would help strengthen the concurrent validity of the PMIS:P and would strengthen the evidence for PMIs as an effective component to anti-bullying interventions.

Fourth, several important peer- and intervention-related variables were related to variations in peer ratings on the PMIS:P. Peers who supported at least one student with ASD reported significantly higher ratings on the PMIS:P. Separately, peers who supported at least one student who does not use speech to communicate also reported significantly higher PMIS:P ratings. While individuals with ASD possess many unique strengths, common among individuals with this disability label are deficits in social domains. Indeed, deficits in social interactions are one of the diagnostic criteria for ASD (American Psychiatric Association, 2013). As the purpose of PMI is often to increase social interactions of students with disabilities, it may be that peers viewed students with ASD and students who do not use speech to communicate as needing higher levels of support. Therefore, perhaps higher PMIS:P ratings are associated with supporting students who the peers consider to have higher support needs.

Peers who received ongoing support from an adult also reported significantly higher ratings on the PMIS:P. Understanding why this finding is statistically significant is more difficult to discern. Mostly, this is because it is unclear what ongoing support looked like for each peer. Some peers may have had a teacher or paraprofessional provide regular, intensive instruction and guidance on how to support the student with whom they worked. Other peers may have been provided more global program support involving less regular interaction with an adult or program coordinator. Future studies should ask peers more detailed questions about the type of ongoing support and assistance they receive from adults/program coordinators to better understand what support elements may be associated with positive peer impacts.

Peers who had prior familiarity with the student whom they supported had higher mean PMIS:P ratings. Although the effect size for the overall measure was small (d = 0.27), the effect size on the social impact factor was moderate (d = 0.41). Perhaps prior familiarity meant the peer and the student already had a shared interest or common experience making it easier to communicate and develop a friendship. This hypothesis is supported by statements made by peers in the Study 1 focus groups who shared that having common interests made friendship development happen more quickly and was easier, generally.

Higher peer ratings on the PMIS:P were positively correlated with spending more time with the students with IDD whom they supported (i.e., more frequent contact with the students with IDD as part of the PMI and more years as a peer participant involved in a PMI). This finding makes sense. Although peers could arguably rate a few PMIS:P items highly after just a single day experience supporting an individual with IDD (e.g., I felt good helping others; I felt needed; I feel better prepared to help people with disabilities in the future), the vast majority of items would likely require peers to spend more substantial time with the students with IDD. Beyond making conceptual sense, this finding is confirmed by what peers shared in the Study 1 focus groups. Peers noted that several areas of personal growth were the result of spending time with the students.

Fifth, while there were some variations across peer- and intervention related-variables, benefits to peers were consistent across different types of PMI experiences. This finding was confirmed in all three studies. Most notably, I found that mean PMIS:P ratings were not significantly different between (a) peers at the middle school or high school level who supported at least one student in a general education classroom and those who did not and (b) peers at the post-secondary level whose formal support roles were academic in nature (i.e., academic tutor,

in-class support, daily planning tutor) and those that were not. These nonsignificant findings suggest peer role and context may not be important in predicting peer outcomes.

Two important considerations should be noted regarding peers' PMI experiences. First, there are likely subtle differences in peer experiences that were not captured in our survey. These differences may contribute to greater variation in PMIS:P ratings. For example, very little is known about the type of support that peers actually provide. Consider the following two fictional peers. One peer is asked to help design appropriate instruction for a student with an IDD in a high school science classroom. A second peer is asked to sit next to a student with an IDD during the same science class and provide assistance when necessary. Both peers are tasked with providing support to a student with an IDD in a general education classroom. However, the type of support provided and the demands on each peer are arguably very different. It is likely that these peers will have distinctly different experiences while both providing support in academic contexts. These differences could contribute to different outcomes as measured by the PMIS:P. Exploring the subtle differences in PMI experiences may be worth exploring in the future to better assess how context and peer role are related to peer outcomes. Second, only 35 out of the 143 included middle and high school peers provided support to students with IDD in a general education classroom. Further, of the 35 peers, only seven peers provided support solely in a general education classroom (i.e., did not also provide support in a special education classroom, at lunch, or in other non-instructional contexts). Given this very small sample of peers who solely provided academic support, future studies should continue to examine if there are significant differences on PMIS:P ratings between middle and high school peers who do and do not support students in general education classrooms.

Sixth, the iterative process by which the PMIS:P was developed and validated should serve as a model for future measurement tool development. In asking peers to share all the ways in which they were impacted, I developed a content valid instrument: The items of the PMIS:P are representative of the actual thoughts of peers. In assessing the underlying factors associated with peer impact, I developed a construct valid measure: Each item of the PMIS:P accounts for an almost equal part of the total variance of the PMIS:P. Indeed, each item is important in measuring and understanding the impact of PMI on peers. In calculating Cronbach's alpha and test-retest reliability, I developed an internally consistent and stable measure. The percentage of exact match agreements averaged 58.1% between the two time points during which peers completed the PMIS:P. Further, the percentage of peers who agreed with an item during both time points (i.e., provided a rating of *somewhat agree*, *agree* or *strongly agree* at both time points) averaged 94.7%. Using the development and validation of the PMIS:P as a road map, future research teams should work to develop tools that more wholly capture the perspectives of several stake holders involved in implementing PMIs (e.g., individuals with disabilities, teachers, administrators). For example, similar to measuring outcomes for peers, social and academic outcomes are often the targets of intervention for students with IDD. It could be argued that less easily observable impacts such as changes in confidence, self-worth, or one's ability to self-advocate are of equal or perhaps greater importance. A similar, iterative process of interviewing individuals with IDD and confirming what they share through the development and refinement of a measurement tool would provide a robust way of understanding all PMI outcomes for students with disabilities. This tool could then similarly be shared with teachers and researchers who are interested in better understanding the impact of their PMIs.

Limitations and Future Research

Future research is needed to address several limitations of these studies. First, the length of time between when peers participated in a PMI and when they completed the PMIS:P was not consistent across participants. Due to the COVID-19 pandemic, some peers were participating in PMIs in person during the fall of the 2020-2021 school year. These peers completed the PMIS:P thinking about their recent experiences. For other peers, their most recent in-person PMI experience was an entire calendar year before they completed the PMIS:P. Future studies can easily remedy this problem of timing in survey distribution by providing the PMIS:P measure at the same time to all study participants. However, this limitation to the current studies also prompts a new question. When should the PMIS:P be distributed to peers? Prior studies that have included surveys or questionnaires to understand perspectives of stakeholders involved in PMIs have done so almost exclusively immediately post-PMI (Travers & Carter, 2021). Future studies should consider distributing the PMIS:P at multiple time points post-PMI to determine how responses to the PMIS:P may change over time.

Second, although these three studies established content and construct validity, they did not address criterion-related validity. Future studies should examine the PMIS:P's relationship to concurrent measures of peer impact. Although no single tool addresses all areas of impact, researchers could examine concurrent validity between a PMIS:P factor and concurrent measures. For example, the *Chedoke-McMaster Attitudes Toward Children with Disabilities* (CATCH; Rosenbaum, Armstrong, & King, 1986) is a measure that has been used with peers to assess how their attitudes toward individuals with disabilities change from pre- to post-intervention (e.g., Hunsaker, 2014). Researchers could assess if the post- ratings on the CATCH are correlated with ratings on the *changes in views* impact factor of the PMIS:P.

Third, there are other interesting and potentially relevant variables related to PMIS:P ratings that should be explored. For example, future studies should ask peers if they received compensation for their participation in a PMI. In their review of peer impact at the post-secondary level, Carter and McCabe (2021) found that renumeration was one of the impacts peers perceived for themselves. Knowing if peers receive course credit or monetary compensation as a part of their program could help to explain peer motivations for becoming involved in PMIs. Moreover, peer motivations to get involved in PMI may be associated with differences in peer outcomes. A second example, future studies should ask peers if they supported at least one student with challenging behaviors. Although supporting a student with challenging behavior was noted as a variable associated with negative outcomes for middle school and high school peers during the focus groups, this finding was not further examined in studies 2 and 3. As peers are asked to support a host of students with varying degrees of challenging behavior it is essential to explore potential negative outcomes (e.g., stress, fear) that may be associated.

Fourth, the response rates for Study 1 and Study 3 were very low (approximately 7.3% and 1.7%, respectively). It should first be noted that it is impossible to discern an exact response rate for either study. Projections are based on reports from recruitment partners estimating how many parents/over 18 peers a recruitment email reached. Although I provided recruitment partners with a pre-drafted recruitment email to send on my behalf, I do not know what the recruitment partners actually sent, the frequency with which they reminded potential participants to click on the e-consent link (if reminder emails were sent at all), or how many bounce back emails the recruitment partners received. Therefore, the projected response rate estimates are likely severely deflated. A second important consideration relates to the timing in which I asked

peers to participate in any one of the three studies. The fall of 2020 was a tumultuous time for all, with most students spending a portion or all of their school day in front of a computer. It is reasonable to think that peers were burnt out on screen time and did not want to spend an extra 75 min (Study 1), 15 min (Study 2) or 30 min (Study 3) in front of a computer when the bulk of their day was already spent in front of a screen. A final consideration, although the response rate was low, the purpose of Study 3 was not to make generalized statements about all peers who participate in peer programs. Rather, Study 3 was conducted to understand the underlying factors related to peer impact while simultaneously validating a new measurement tool. Indeed, a sufficient number of peers were recruited for these purposes. Future studies interested in making generalized statements about how peers are impacted should recruit larger samples of peers who have participated in PMIs.

Fifth, there were not enough middle school participants in any of the three studies to claim that the PMIS:P is a valid measure for use with this population. Although I sent recruitment emails to parents of students in 6th through 8th grade, only seven middle school participants completed the PMIS:P. It is possible that the limited number of younger peer participants reflects the limited number of PMIs being implemented in middle schools (Travers & Carter, under review). If this is indeed the case, researchers should continue to explore how PMIs implemented at the middle school level can support positive outcomes for students with and without IDD. Further, considering how peer advocacy skills may improve as a result of their involvement in PMI, it may be particularly important to implement PMI at the middle school levels. Shared by focus group peers in Study 1, middle school is when bullying and use of inappropriate language may be most prevalent.

Implications for Practice

The findings of these papers have two important implications for practice. First, and perhaps most obvious, all students who participate in PMIs benefit from their experience. Although some educators may think of PMIs as interventions to solely support students with IDD, these three studies echo the findings of prior reviews that suggest benefits of PMIs are reciprocal for the peers without disabilities. Indeed, peers strongly affirm that they are positively impacted. As general education teachers, particularly at the secondary level, struggle to meaningfully include students with IDD (Kuntz & Carter, 2019), PMIs offer a promising solution and should be used more frequently. Further, with the enactment of the Every Student Succeeds Act (ESSA; 2015), states are required to incorporate indicators of school quality and student success that are not based on math or reading test scores. In response, a growing number of states have established standards for social emotional learning or have incorporated social-emotional skills into their academic content standards (Dusenbury et al., 2015). As evidenced by these three studies, PMI can offer another way for schools to target social-emotional skills. These three studies demonstrate that peers benefit from PMI in many of the ways that schools want for their students. Finally, given the range of benefits for peers, teachers should consider recruiting peers who themselves may need support (e.g., students who lack confidence, students with small social networks).

It may be that PMIs also benefit individuals not formally involved in PMI programs. For example, during the Study 1 focus groups, several high school peers spoke about how their PMI programs were a large and dominant part of their school culture. They suggested that a student did not need to be involved in the peer program to benefit for the presence of the program in the school. Stated by one high school senior:

> For our school I feel that the program is so... I guess involved in not just the class but just in everything. You could walk around the halls and know somebody's not in the program, but [students not involved in the peer program] know [the names of the students with IDD in the program]. They'll give [the students with IDD] fist bumps. I guess in our school—yeah it's an amazing thing to be a part of the program—but you don't need to be a part of the program to know a lot of these [students with IDD] which is super cool to see. Like my best friend she knows all the [students with IDD]. They eat lunch with [me and the student with IDD whom I support]. It's just really cool to see the culture of this school just be... I guess, just embrace everything and just support [the students with IDD] and be friends with them.

In the Study 2 follow-up survey, I asked peers to rate the degree to which they agreed with the statement, "The relationship I developed with the student(s) with disabilities I supported positively impacted my friends and family" on a 4-point Likert-type scale. Average ratings were high (M = 3.39, SD = 0.68) with 34 peers agreeing or strongly agreeing with the statement. Although the Study 1 and Study 2 samples were small, peers suggest that these programs can provide benefits to a wider range of individuals than just the students who are involved in the programs. Sharing this information could be particularly important for educators who want to expand implementation of PMI in their schools but receive resistance from school administration.

Second, educators, program coordinators, IHE leaders, and researchers should use the PMIS:P to explore the ways the peers in their programs benefit from their involvement. While the PMIS:P was created using an online system, it can easily be adapted to a paper and pencil format for easy use. Teachers and coordinators should consider asking all peer participants to complete the measure at the same time. This will allow for the greatest degree of anonymity possible. For teachers, the PMIS:P allows for easy data collection on outcomes for the peers. The results of the PMIS:P can then be shared with fellow teachers, administrators, and students' families to demonstrate the range of outcomes for all students. This may help to reduce any remaining resistance to these programs. As well, it may help incentivize other educators to adopt

these programs in their classrooms. For PMI program coordinators and IHE leaders, the PMIS:P can be used to support grant writing. The Higher Education Opportunity Act of 2008 allocated federal monies to support the growth of model demonstration IHE programs. However, individual programs are still responsible for applying for grants to receive these federal funds. To receive any grant funding, a program coordinator must make a strong argument as to why they deserve the monies. Often, this argument is made through the presentation of data showing the positive outcomes for the program participants. While data on the students with IDD is commonly collected, very few programs have data on the peer participants. The PMIS:P can now allow coordinators to easily collect outcome data on peers, too. Finally, for researchers who implement PMI at the secondary and post-secondary level, the PMIS:P can be used as an outcome measure. A critique from prior reviews is that researchers often create their own social validity measures that do not capture the range of ways that peers who participate in PMI may be impacted (Travers & Carter, 2021). The PMIS:P offers a solution to this problem.

Findings from these three interconnected studies confirm that secondary and post-secondary peers who participate in PMIs alongside students with IDD are positively impacted in numerous and varied ways. In creating the PMIS:P, through an iterative process of development and refinement, I produced a tool that is both reliable as well as content and construct valid. Now, teachers, program coordinators, IHE coordinators, and researchers can use the PMIS:P to assess all of the potential ways in which peers may be positively impacted by their involvement in PMIs. Looking forward, future research is needed to more fully explore variables that may be associated with higher mean PMIS:P ratings. In better understanding outcomes for peers, PMIs may be strengthened to support all students.

Appendix A

Focus Group Protocol and Interview Questions

Protocol:
This is a semi-structured focus group interview protocol designed to learn about (a) the impacts peers experienced from participating in a PMI and (b) how peers feel our PMIS:P adequately captures the range of ways peers may be impacted. The interview protocol is broken down into two main sections (see below). After providing an introduction, I will first meet with the group of peers asking the questions provided below. After the interview, the peers will be asked to use this link, MASKED LINK, to access a REDCap survey. The survey should take approximately 10 minutes and will ask the peers questions related to (a) their demographic characteristics and their prior experience with people with disabilities, (b) the student(s) with disabilities that was also involved in the PMI, (c) the PMI approach, recruitment, and other PMI characteristics. At the end of the survey the peers will have the option of accepting a $20 gift card to their choice among four store options. The entire focus group interview, including the time required to take the REDCap survey, will last approximately 75 minutes.

The interviewer will use the questions below to guide the interview while gauging the student's comfort and willingness to engage with the interviewer. Follow up questions such as "can you tell me more?", "can you give me an example?", or "can you tell me a story about it?" will be used to gather additional information. All interviews will be audio recorded and later transcribed. The recording device will be started before the interview.

Introduction- to be read to the peers
"Good [morning/afternoon]! My name is Hilary and I am going to be leading this focus group today. I first want to thank you for participating in this group as we learn more about the experiences of peers who have participated in peer-mediated interventions. We know that peer-mediated interventions can be great experiences for students with disabilities to learn and make friends, but today we want to learn how these experiences have impacted you, the peer [partners/mentors/teammates]. I am going to be audio recording our focus group today. The recorder will only record our voices and what we say; I am not recording a video with your faces. I'm doing this so that I won't forget what you say.

I won't share anything we talk about with other students or teachers at your school. I also won't share any information with your parents, teachers, or coaches. You do not have to do this if you do not want to. If you want to stop at any time, you can just let me know and you can exit our zoom room by clicking the leave button on the bottom right of your screen. Alternatively, if you do not want to answer a question, just tell me and we can skip it. At the end of this focus group I'm going to ask you to take a short survey. The survey asks you questions about you, the student or students your supported and the peer mediated intervention you participated in. At the end of the survey you will be directed to a link where you can claim a $20 gift card to your choice of one of four stores [list the four stores]. This is our way of saying thank you for taking the time to help us learn. What questions do you have for me before we get started?"

Interview Questions:

1. Tell us your name, your age, and one thing you enjoy doing when you are not at school.
2. What made you decide to participate in a [insert name of PMI]?
3. Can you describe your role as a peer [partner, mentor]?
    i. How did an adult describe your role to you?
    ii. What were you told to do as part of your PMI?
    iii. What did you and your focus student do together?
4. In what ways were you impacted from your [insert name of PMI] experience?
    i. Are there specific ways you benefitted?
    ii. Are there specific ways you were negatively impacted?
5. What aspects of [insert name of PMI] have contributed most to these impacts?

Depending on how peers respond to the first three questions, I will ask the following follow-up questions to probe further about specific areas of impact identified in Travers and Carter (in press) that were not yet mentioned:

SOCIAL IMPACT

1. Have you been impacted socially?
    a. Now that [insert name of PMI] is over, what (if any) sort of interactions or contacts have you had with your partner with disabilities?
        i. Do you anticipate hanging out with your partner in the future? (In school? Outside of school?)

CHANGE IN VIEWS

1. Have you changed your views about individuals with disabilities?
    a. Are you more comfortable around your focus student? What about other people with disabilities in your school or community?

CHANGE IN FUTURE INTENTIONS

1. (For high school and post-secondary education students) Has participating in [insert name of PMI] made you consider a career that involves supporting individuals with disabilities?

ACADEMIC IMPACT

1. Have you been impacted academically?
    a. Did your grades change since you participated in [insert name of PMI]?
    b. Was it easier or harder to get your own schoolwork done during [insert name of PMI]?
    c. Was it easier or harder to stay focused during class while you were supporting another student?

KNOWLEDGE DEVELOPMENT

1. What new things have you learned since participating in the [insert name of PMI]?

SKILL DEVELOPMENT

1. Have you noticed any changes in your communication skills?

DEVELOPMENT OF PERSONAL QUALITIES/CHANGES IN SELF-PERCEPTION

1. Have you noticed any other changes about yourself?
    a. Have you become… more patient?
    b. More kind?

c. More appreciative of your own life?
d. Has your self-worth changed?
e. Do you have more pride in yourself?

Appendix B

Post-Focus Group Reflection Notes

Interview Date/Time:

1. **Describe any contextual variables that might have affected student responses (e.g., younger sibling or parent in background, lots of activity in background, etc.)**

2. **Describe the affect of the peers. In what ways did this change (if at all) throughout the interview process?**

3. **Describe how the interview impacted you. Were things shared that surprised you and/or challenged your own experiences or expectations?**

4. **List any suggestions or changes for future interviews**

5. **Add any additional comments that may be important.**

References

Agran, M., Jackson, L., Kurth, J. A., Ryndak, D., Burnette, K., Jameson, M., Zagona, A., Fitzpatrick, H., & Wehmeyer, M. (2020). Why aren't students with severe disabilities being placed in general education classrooms: Examining the relations among classroom placement, learner outcomes, and other factors. *Research and Practice for Persons with Severe Disabilities, 45*(1), 4-13. https://doi.org/10.1177/1540796919878134

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). https://doi.org/10.1176/appi.books.9780890425596

Asmus, J. M., Carter, E. W., Moss, C. K., Born, T. L., Vincent, L. B., Lloyd, B. P., & Chung, Y. (2016). Social outcomes and acceptability of two peer-mediated interventions for high school students with severe disabilities: A pilot survey. *Inclusion, 4*(4), 195-214. https://doi.org/10.1352/2326-6988-4.4.195

Asmus, J. M., Carter, E. W., Moss, C. L., Biggs, E. E., Daniel, M., Born, T. L, Bottema-Beutel, K., Brock, M. E., Cattey, G. N., Cooney, M., Fesperman, E. S., Hochman, J. M., Huber, H. B., Lequia, J. L., Lyons, G. L., Vincent, L. B., & Weir, K. (2017). Efficacy and social validity of peer network interventions for high school students with severe disabilities. *American Journal on Intellectual and Developmental Disabilities, 122*(2), 118-137. https://doi.org/10.1352/1944-7558-122.2.118

Biggs, E. E., Carter, E. W., & Gustafson, J. (2017). Efficacy of peer support arrangements to increase peer interaction and AAC use. *American Journal on Intellectual and Developmental Disabilities, 122*(1), 25-48. https://doi.org/10.1352/1944-7558-122.1.25

Born, T. (2015). *Social skills instruction for students with autism spectrum disorders: Examining the impacts of social skills instruction delivered through a peer network* (Publication No. 10186926) [Doctoral dissertation, University of Wisconsin-Madison]. ProQuest Dissertations Publishing.

Brady, M. P., Shores, R. E., McEvoy, M. A., Ellis, D., & Fox, J. J. (1987). Increasing social interactions of severely handicapped autistic children. *Journal of Autism and Developmental Disorders, 17*, 375–390. https://doi.org/10.1007/BF01487067

Brantlinger, E., Jimenez, R., Klingner, J., Pugach, M., & Richardson, V. (2005). Qualitative studies in special education. *Exceptional Children, 71*(2), 195-207. https://doi.org/10.1177/001440290507100205

Brock, M. E., & Huber, H. B. (2017). Are peer support arrangements an evidence-based practice? A systematic review. *The Journal of Special Education, 51*(3), 150-163. https://doi.org/10.1177/0022466917708184

Carter, E. W. (2017). The promise and practice of peer support arrangements for students with

intellectual and developmental disabilities. *International Review of Research in Developmental Disabilities, 52,* 141-174. https://doi.org/10.1016/bs.irrdd.2017.04.001

Carter, E. W., Asmus, J., Moss, C. K., Biggs, E. E., Bolt, D. M., Born, T. L., Brock, M. E., Cattey, G. N., Chen, R., Cooney, M., Fesperman, E., Hochman, J. M., Huber, H. B., Lequia, J. L., Lyons, G., Moyseenko, K. A., Riesch, L. M., Shalev, R. A., Vincent, L. B., & Weir, K. (2016). Randomized evaluation of peer support arrangements to support the inclusion of high school students with severe disabilities. *Exceptional Children, 82*(2), 209-233. https://doi.org/10.1177/0014402915598780

Carter, E. W., & Kennedy, C. H. (2006). Promoting access to the general curriculum using peer support strategies. *Research and Practice for Persons with Severe Disabilities, 31*(4), 284-292. https://doi.org/10.1177/154079690603100402

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

Carter, E. W., & Pesko, M. J. (2008). Social validity of peer intervention strategies in high school classrooms: Effectiveness, feasibility, and actual use. *Exceptionality, 16*(3), 156-173. https://doi.org/10.1080/09362830802198427

Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research, 2*, 245-276.

Chan, J. M., Lang, R., Rispoli, M., O'Reilly, M., Sigafoos, J., & Cole, H. (2009). Use of peer-mediated interventions in the treatment of autism spectrum disorders: A systematic review. *Research in Autism Spectrum Disorders, 3*(4), 877-889. https://doi.org/10.1016/j.rasd.2009.04.003

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry & research design: Choosing among five approaches* (4th ed.). SAGE.

Dusenbury, L., Newman, J. Z., Weissberg, R. P., Goren, P., Domitrovich, C. E., & Mart, A. K. (2015). Developing a blueprint for preschool to high school education in social and emotional learning: The case for state learning standards. In J. A. Durlak, C. E. Domitrovich, R. P. Weissberg, & T. P. Gullotta (Eds.), *Handbook of social and emotional learning: Research and practice* (pp. 532-548). Guilford Press.

Dziuban, C. D., & Shirkey, E. C. (1974). When is a correlation matrix appropriate for factor analysis: Some decisions rules. *Psychological Bulletin, 81*(6), 358-361. https://doi.org/10.1037/h0036316

Elo, S., Kääriäinen, M., Kanste, O., Pölkki, T., Utrianinen, K., & Kyngäs, H. (2014). Qualitative content analysis: A focus on Trustworthiness. *SAGE Open, 4*(1), 1-10. https://doi.org/10.1177/2158244014522633

Every Student Succeeds Act, 20 U.S.C. § 6301 (2015). https://www.congress.gov/bill/114th-congress/senate-bill/1177

Fabrigar, L. R., & Wegener, D. T. (2012). *Exploratory factor analysis: Understanding statistics*. Oxford University Press.

Finch, W. H. (2020). *Exploratory factor analysis*. SAGE.

Gao, W. (2020). *Anti-bullying interventions for children with special needs: A 2003-2020 systematic literature review* [Unpublished master's thesis]. Jönköping University.

Gardner, K. F., Carter, E. W., Gustafson, J. R., Hochman, J. M., Harvey, M. N., Mullins, T. S., & Fan, H. (2014). Effects of peer networks on the social interactions of high school students with autism spectrum disorders. *Research and Practice for Persons with Severe Disabilities, 39*(2), 100-118. https://doi.org/10.1177/1540796914544550

Glass, C. R., & Arnkoff, D. B. (1997). Questionnaire methods of cognitive self-statement assessment. *Journal of Consulting and Clinical Psychology, 65*(6), 911-927. https://doi.org/10.1037/0022-006C.65.6.911

Haring, T. G., & Breen, C. G. (1992). A peer-mediated social network intervention to enhance the social integration of persons with moderate and severe disabilities. *Journal of Applied Behavior Analysis, 25*(2), 319-333. https://doi.org/10.1901/jaba.1992.25-319

Haring, T. G., Roger, B., Lee, M., Breen, C., & Gaylord-Ross, R. (1986). Teaching social language to moderately handicapped students. *Journal of Applied Behavior Analysis*, *19*(2), 159–171. https://doi.org/10.1901/jaba.1986.19-159

Harris, P. A., Taylor, R., Thielke, R., Payne, J., Gonzalez, N., & Conde, J. G., (2009). Research electronic data capture (REDCap)—A metadata-driven methodology and workflow process for providing translational research informatics support**.** *Journal of Biomedical Informatics, 42*(2), 377-381. https://doi.org/10.1016/j.jbi.2008.08.010

Hayton, J. C., Allen, D. G., & Scarpello, V. (2004). Factor retention decisions in exploratory factor analysis: A tutorial on parallel analysis. *Organizational Research Methods, 7*(2), 191-205. https://doi.org.10.1177/1094428104263675

Hendrickson, A. E., & White, P. O. (1964). Promax: A quick method for rotation to oblique simple structure. *British Journal of Statistical Psychology, 17*(1), 65-70.

Hochman, J. M., Carter, E. W., Bottema-Beutel, K., Harvey, M. N., & Gustafson, J. R. (2015). Efficacy of peer networks to increase social connections among high school students with and without autism spectrum disorder. *Exceptional Children, 82*(1), 96-116. https://doi.org/10.1177/0014402915585482

Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika, 30*, 179-185.

Huber, H. B., & Carter, E. W. (2016). Data-driven individualization in peer-mediated interventions for students with ASD: A literature review. *Review Journal of Autism and Developmental Disorders, 3*(3), 239-253. https://doi.org/10.1007/s40489-016-0079-8

Huber, H. B., Carter, E. W., Lopano, S. E., & Stankiewicz, K. C. (2018). Using structural analysis to inform peer support arrangements for high school students with severe disabilities. *American Journal on Intellectual and Developmental Disabilities, 123*(2), 119-139. https://doi.org/10.1352/1944-7558-123.2.119

Hughes, C., Copeland, S. R., Guth, C., Rung, L. L., Hwang, B., Kleeb, G., & Strong, M. (2001). General education students' perspectives on their involvement in a high school peer buddy program. *Education and Training in Mental Retardation and Developmental Disabilities, 36*(4), 343-356. https://www.jstor.org/stable/23879896

Humphrey, N., & Hebron, J. (2015). Bullying of children and adolescents with autism spectrum conditions: a 'state of the field' review. *International Journal of Inclusive Education, 19*(8), 845-862. http://dx.doi.org/10.1080/13603116.2014.981602

Hunsaker, A. (2014). *The effects of peer tutoring on junior high general education students' attitudes toward students with severe disabilities* [Unpublished master's thesis]. Brigham Young University.

Individuals With Disabilities Education Improvement Act of 2004, PL 108-446, 118 Stat. 2647 (2004).

Kaiser, H. F. (1958). The varimax criterion for analytic rotation in factor analysis. *Psychometrika, 23*, 187-200.

Kuntz, E. M., & Carter, E. W. (2019). Review of interventions supporting secondary students with intellectual disability in general education classes. *Research and Practice for Persons with Severe Disabilities, 44*(2), 103-121. https://doi.org/10.1177/1540796919847483

Mavropoulou, S., Railey, K. S., & Campbell, J. M. (2020). Peers as influential agents of the inclusion of learners with autism. In C. Boyle, J. Anderson, A. Page, & S. Mavropoulou (Eds.), *Inclusive education: Global issues and controversies* (Vol. 45, pp. 179-201). BRILL. https://doi.org/10.1163/9789004431771_011

Morningstar, M. E., Allcock, H. C., White, J. M., Taub, D., Kurth, J. A., Gonsier-Gerdin, J., Ryndak, D. L., Sauer, J., & Jorgensen, C. M. (2016). Inclusive education national research advocacy agenda: A call to action. *Research and Practice for Persons with Severe Disabilities, 41*(3), 1-7. https://doi.org/10.1177/1540796916650975

Moustakas, C. (1994). *Phenomenological research methods*. SAGE.

Neitzel, J. (2008). *Overview of peer-mediated instruction and intervention for children and youth with autism spectrum disorders*. National Professional Development Center on Autism Spectrum Disorders, Frank Porter Graham Child Development Institute, The University of North Carolina.

Ostrosky, M. M., & Kaiser, A. P. (1995). The effects of a peer-mediated intervention on the social communicative interactions between children with and without special needs. *Journal of Behavioral Education*, *5*, 151–171. https://doi.org/10.1007/BF02110203

Patton, M. Q. (2002). *Qualitative research and evaluation methods*. SAGE.

Sasso, G., Mundschenk, N., Melloy, K., & Casey, S. (1998). A comparison of the effects of organismic and setting variables on the social interaction behavior of children with developmental disabilities and autism. *Focus on Autism and Other Developmental Disabilities, 13*(1), 2–16. https://doi.org/10.1177/108835769801300101

Schaefer, J. M., Cannella-Malone, H.I., Carter, E. W. (2016). The place of peers in peer-mediated interventions for students with intellectual disability. *Remedial and Special Education, 37*(6), 345-356. https://doi.org/10.1177/0741932516629220

Simms, L. J., Zelazny, K., Williams, T. F., & Bernstein, L. (2019). Does the number of response options matter? Psychometric perspectives using personality questionnaire data. *Psychological Assessment, 31*(4), 557-566. http://dx.doi.org/10.1037/pas0000648

Tabachnick, B. G., & and Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Pearson.

Thoma, C. A., Cain, I., & Walther-Thomas, C. (2015). National goals for the education of children and youth with intellectual and developmental disabilities: Honoring the past while moving forward. *Inclusion, 3*(4), 219-226. https://doi.org/10.1352/2326-6988-3.4.219

Travers, H. E., & Carter, E. W. (2021). A systematic review of how peer-mediated interventions impact students without disabilities. *Remedial and Special Education.* https://doi.org/10/1177/0741932521989414

Travers, H. E. & Carter, E. W. (under review). *A portrait of peers within peer-mediated interventions: A literature review.*

Rosenbaum. P. L., Armstrong, R. W., & King, S. M. (1986). Children's attitudes toward disabled peers: A self-report measure. *Journal of Pediatric Psychology, 11*(4), 517-530. https://doi.org/10.1093/jpepsy/11.4.517

Ryndak, D., Jackson, L. B., & White, J. M. (2013). Involvement and progress in the general curriculum for students with extensive support needs: K-12 inclusive-education research and implications for the future. *Inclusion, 1*(1), 28-49. https://doi.org/10.1352/2326-6988-1.1.028

Siperstein, G. N., McDowell, E. D., Jacobs, H. E., Stokes, J. E., & Cahn, A. L. (2019). Unified extracurricular activities as a pathway to social inclusion in high schools. *American Journal on*

Intellectual and Developmental Disabilities, 124(6), 568-582. https://doi.org/10.1352/1944-7558-124.6.568

van Manen, M. (1990). *Researching lived experience: Human science for an action sensitive pedagogy* (2nd ed.). SUNY Press.

Watkins, L., O'Reilly, M., Kuhn, M., Gevarter, C., Lancioni, G. E., Sigafoos, J., & Lang, R. (2015). A review of peer-mediated social interaction interventions for students with autism in inclusive settings. *Journal of Autism and Developmental Disorders, 45*(4), 1070-1083. https://doi.org/10.1007/s10803-014-2264-x

Wehby, J. H., Maggin, D. M., Partin, T. C. M., & Robertson, R. (2012). The impact of working alliance, social validity, and burnout on implementation fidelity of the good behavior game. *School Mental Health, 4*(1), 22-33. https://doi.org/10.1007/s12310-011-9067-4

Wong, C., Odom, S. L., Hume, K., Fettig, A., Kucharczyk, S., Brock, M. E., Plavnick, J. B., Fleury, V. P., & Schultz, T. R. (2014). Evidence-based practices for children, youth, and young adults with autism spectrum disorder: A comprehensive review. *Journal of Autism and Developmental Disorders, 45*(7), 1951-1966. https://doi.org/10.1007/s10803-014-2351-z