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Adaptations to Early Intervention Service Delivery During COVID-19

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Adaptations to Early Intervention Service Delivery During COVID-19

Abstract

Background: Early Intervention (EI) systems made a rapid shift to telehealth during the COVID-19 pandemic. Given the limited preparation of EI providers in the telehealth service delivery model, it is unclear how providers implemented adaptations. The purpose of this study was to evaluate the factor structure of the *Service Delivery Adaptations Questionnaire* and examine the influence of provider type, years of EI experience, and willingness to return to in-person services on the questionnaire's subscales.

Method: We used exploratory factor analysis (EFA) to examine the structure of the *Service Delivery Adaptations Questionnaire* among n = 704 EI providers. We used multivariate linear regression (subsample of n = 595 EI providers) to understand the influence of person factors on the subscales of the measure.

Results: EFA results showed a four-factor solution that accounted for 57.33% of the variance. Willingness to return to in-person services had a significant influence on scores; provider type showed significant differences on the intervention adaptations subscale, and the effects were moderated by years of experience in EI.

Conclusion: The ways that occupational therapists rated practice changes, particularly intervention adaptations as a result of using telehealth during COVID-19, was highly influenced by their willingness to return to in-person services and years in practice.

Comments

The authors report no potential conflicts of interest.

Keywords

early intervention, telehealth, COVID-19

Cover Page Footnote

We acknowledge members of the EI telehealth survey workgroup. We thank the Early Intervention providers that completed the survey.

Credentials Display

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During the COVID-19 pandemic, telehealth rapidly expanded as a service delivery model across state early intervention (EI) systems (Edelman, 2020). AOTA defines telehealth as "the application of evaluative, consultative, preventative, and therapeutic services delivered through information and communication technology" (AOTA, 2018, p. 1). Efforts in occupational therapy have been underway for the past decade to educate therapists and stakeholders about telehealth (AOTA, 2013). Evidence suggests that prior to COVID-19 the perceptions of clients receiving telehealth delivered by occupational therapists were positive (Serwe et al., 2019; Wallisch et al., 2018). However, additional research prior to COVID-19, while limited, suggests that occupational therapists' attitudes and perceptions toward telehealth were mixed; many therapists reported they did not have the necessary professional development opportunities to implement services via telehealth effectively (Hersch et al., 2015; Rortvedt & Jacobs, 2019).

A national survey conducted by AOTA revealed that of the nearly 2,000 respondents across practice settings, almost one-third adopted the use of telehealth during the COVID-19 pandemic (AOTA, 2020). While some states' EI systems implemented telehealth, including training for EI providers (Cole et al., 2016, 2019), the majority of EI systems that made the rapid shift to telehealth during the pandemic did so with a workforce that was largely inexperienced in using telehealth to deliver EI services. Given the limited preparation, training, and continuing education opportunities among EI providers to use telehealth effectively to deliver interventions, research is needed to understand EI providers' perceptions of the specific adaptations that were necessary to pivot to telehealth.

EI positively impacts children's developmental trajectories (Klintwall et al., 2015) by increasing children's involvement in everyday opportunities for participation (Dunst et al., 2006). EI also increases family resilience (Twoy et al., 2007) and caregiver capacity; therefore, it was vital to maintain families' access to EI services during the pandemic through telehealth. Previous research shows that telehealth may be an efficacious model to serve families in EI (Cason, 2009, 2011), including families of young children with various neurodevelopmental conditions, such as autism spectrum disorders (for review see Sutherland et al., 2018) and Fragile X Syndrome (Hall et al., 2020). In addition, telehealth results in cost savings (Little, Wallisch, et al., 2018) and has been shown as highly acceptable to families (Wallisch et al., 2019). Common benefits of telehealth service delivery include increased access, improved convenience, and flexibility (Behl et al., 2017). As health care professionals suddenly adopted telehealth at the onset of the COVID-19 pandemic, many occupational therapists were using telehealth without prior continuing education or mentorship to support such an abrupt shift in the method of service delivery. For many occupational therapists, the transition to telehealth presented opportunities related to the expertise in promoting participation in authentic contexts, as well as challenges because of the hands-on nature of the work.

The purpose of this study was to examine the factor structure of a measure of service delivery adaptations resulting from the shift to telehealth in EI during the COVID-19 pandemic. In addition, we investigated the extent to which EI providers (occupational therapists, developmental therapists, physical therapists, and speech-language pathologists) differed on factors (e.g., years of practice) related to EI service delivery adaptations. If we can understand how the shift to telehealth influenced adaptations to practice among specific subsets of therapists, we can better design continuing education opportunities to assist those that may need increased support to use telehealth post COVID-19.

Method

Procedures

A midwestern state's EI system began guidance and reimbursement for telehealth in early April 2020, resulting in all EI occupational therapists having the option to use telehealth. The state's EI training program developed a 3.5 hr mandatory continuing education training that focused on early childhood coaching (Rush & Sheldon, 2020) and drew from research on coaching delivered via telehealth in occupational therapy (Little, Pope, et al., 2018). All EI providers in the state had to complete the training prior to using telehealth as a service delivery option.

Approximately 2 months after the initiation of telehealth in the EI system, a group of interprofessional EI stakeholders, including occupational therapists, physical therapists, speech-language pathologists, developmental therapists, service coordinators, and a parent representative collaborated to develop surveys for three groups: EI families, providers, and service coordinators. This study reports on the results of the EI provider survey, which used a Likert scale (1 = *strongly disagree* to 5 = *strongly agree*) to capture perceptions of telehealth. REDCap®, a secure application for developing online surveys (https://www.project-redcap.org) (Harris et al., 2019), was used to collect data. We obtained university approval for the current study as a quality improvement project; all survey data was anonymous and considered non-human subjects research, as responses could never be linked to individuals. To recruit EI providers, we used online flyers and advertised through state associations and social media, such as the Facebook groups of EI providers. The REDCap® survey was open between July 3, 2020 through August 12, 2020.

Measures

To create a measure of adaptations that occurred as a result of the rapid shift to telehealth, our interprofessional group of stakeholders (n = 10) created a short online survey, the *Service Delivery Adaptations Questionnaire*. The Likert scale was 1 = *strongly agree* to 5 = *strongly disagree* (a lower score indicates increased adaptations). The participants rated their perceptions of how their EI practice had been impacted by COVID-19. The measure also included questions related to resources that the EI providers were using to support families and factors that personally impacted the EI providers, such as mental health, change in routines and work environments, and loss of employment and wages. We also created a short demographic section that inquired about the EI providers' identified professions and years in EI practice. As we were collecting data in July 2020, during a peak of the COVID-19 pandemic, we included the following question: "Are you comfortable returning to in-person/face-to-face visits?" The response scale was *yes* or *no*.

Data Analysis

SPSS 27.0 was used to analyze data. We used descriptive statistics to characterize the number and type of EI providers that participated in the study. To address Research Question 1 (What is the factor structure of a measure of change in practice patterns among EI providers?), we used exploratory factor analysis (EFA). EFA is used to explain the variation and covariation in a set of variables (Preacher & MacCallum, 2003) and is appropriate for use when there is limited research on the phenomenon of interest. As there was no validated measure to address the rapid change to telehealth among EI providers, we used EFA to understand if the survey items shared variance that could be characterized by factors and parsed into subscales. Specifically, we used a principal components analysis approach with Varimax rotation, which is appropriate for beginning stages of exploratory analysis when it is unclear if factors were correlated, and for a simple interpretation of data (Corner, 2009).

To address Research Question 2 (To what extent do EI provider professions, as influenced by number of years of practice in EI and comfort returning face-to-face, differ on the factors associated with the shift to telehealth?), we used multivariate linear regression. Dependent variables included the subscores on factors related to adaptations (based on factor analysis results), and independent variables included profession (occupational therapy, physical therapy, speech-language pathology, developmental therapy), years in EI practice, and comfort with returning to face-to-face service provision (*yes, no*). We tested the main effects of all variables (i.e., profession, years in EI practice, comfort level) as well as all interactions.

Results

Participants

The survey was completed by 792 EI providers between July 3, 2020 through August 12, 2020. However, a number of the responses were excluded from data analysis (n = 17 reported they were not EI providers, n = 32 had not provided telehealth, n = 15 stopped providing telehealth, n = 24 were missing more than 10% of data). Therefore, 704 EI providers were included in the analysis for Research Question 1 (see Table 1). As we initially tested 14 research questions, the current study exceeded Gorsuch's (1990) recommendation for a 5:1 ratio of number of participants to number of items. Out of the 704 EI providers, many professions presented with small sample sizes; we included four professions (occupational therapist, physical therapist, speech-language pathologist, developmental therapist) in the second research question to ensure adequate power for statistical analyses (see Table 1).

Table 1
Sample Demographics

	RQ1 Sample (n = 704) n (%)	**RQ2 Sample (n = 595) n (%)**
EI Provider Type		
Speech-Language Pathologist	225 (32.0)	225 (37.8)
Developmental Therapist	173 (24.6)	173 (29.1)
Occupational Therapist	106 (15.1)	106 (17.8)
Physical Therapist	91 (12.9)	91 (15.3)
Speech-Language Pathology Assistant	33 (4.7)	
Interpreter/Translator	21 (3)	
Occupational Therapy Assistant	17 (2.4)	
Counselor	11 (1.6)	
Nutritionist	11 (1.6)	
Physical Therapist Assistant	7 (1.0)	
Other	4 (.6)	
Social Worker	3 (.4)	
Board Certified Behavior Analyst	2 (.3)	
Years of EI Experience		
< 1 year	48 (6.8)	41 (6.9)
1–5 years	143 (20.3)	121 (20.3)
6–10 years	129 (18.3)	105 (17.6)
11–20 years	233 (33.1)	190 (31.9)
20+ years	150 (21.3)	137 (23.0)

Willingness to Return In-Person		
No	409 (58.1)	344 (57.8)
Yes	290 (4.12)	246 (41.3)
Missing	5 (.7)	5 (.9)

Exploratory Factor Analysis

The results showed that a four-factor solution most succinctly characterized the data. Research suggests that retaining eigenvalues over 1.00 is an accurate method of determining number of factors (Preacher & MacCallum, 2003); the results of the scree plot showed four factors had eigenvalues above 1.0 (range 1.021–3.081). See Table 2 for EFA results. The four-factor solution accounted for 57.33% of the variance, which is above the suggestion of at least 50% (Streiner, 1994). The magnitude of difference between items should be considered in the deletion of items, in addition to the examination of the factor correlations and item communalities (Worthington & Whittaker, 2006). For the current analysis, one item (i.e., I serve families that experience service delay) approached the magnitude of difference between items (.087); the item was kept on Factor 4 to remain consistent with positive scoring of that factor. The authors examined the content of the items and identified the four factors as (a) scheduling/caseload; (b) logistic adaptations; (c) financial implications; and (d) intervention adaptations. Each of the four factors is related to changes or adaptations based on the transition from in-person EI to telehealth delivered intervention.

Table 2
EFA Results

Questionnaire Item	**F1**	**F2**	**F3**	**F4**
F1. I've had fewer sessions	**0.885**	0.071	0.115	-0.013
F1. I've had more sessions	**-0.88***	-0.037	-0.007	0.094
F1. I've had more cancellations	**0.598**	0.032	0.346	-0.171
F2. I've had to adapt to working from home	0.173	**0.623**	0.04	0.272
F2. I've had to learn a new skill	-0.087	**0.786**	0.056	0.086
F2. I've had to learn new technology	-0.098	**0.812**	0.058	-0.009
F2. I've had to explain telehealth to my families	0.184	**0.572**	0.105	0.004
F3. It costs more money to do Live Video Visits	0.19	0.217	**0.534**	-0.35
F3. I had to purchase a new device	0.068	0.045	**0.84**	-0.01
F3. I had to purchase additional data	0.061	0.069	**0.865**	-0.022
F4. I've had to adapt to coaching	-0.001	0.15	-0.12	**0.671**
F4. I've had to adapt to not bringing toys	0.099	0.316	-0.017	**0.435**
F4. I serve families that have experienced service delay	-0.456	-0.069	0.144	**0.543**
F4. I have more flexibility of when I see families	-0.253	0.015	-0.116	**0.636**

Note. *Reverse scored in subscale scores.

Multivariate Regression

From the results of the EFA, we created four scores: (a) scheduling/caseload; (b) logistic adaptations; (c) financial implications; and (d) intervention adaptations. The Likert scale was 1 = *strongly agree* to 5 = *strongly disagree* and indicates that a lower score may be interpreted as a perception of more change. Because of the negative loadings of items on scheduling/caseload, this subscale was reverse scored for all analyses. The results of the multivariate regression showed significant main effects for provider type (occupational therapist, speech-language pathologist, physical therapist, developmental therapist), years in practice (0–20+years), willingness to return to in-person (*yes/no*), and a significant interaction between provider type and years in practice. See Table 3.

While the model showed significant effect on scheduling/caseload, logistic adaptations, and financial implications, the adjusted R^2 for the intervention adaptations was highest at .092, or 9.2% of the model. In this domain, intervention adaptations, occupational therapists (M = 2.33 [SD = .67]), physical therapists (M = 2.44 [.60]), and speech-language pathologists (M = 2.19 [SD = .61]) were significantly different from developmental therapists (M = 2.27 [SD = .63]) (all $p < .05$). This suggests that occupational therapists, physical therapists, and speech-language pathologists were making fewer adaptations to practice with the shift to telehealth. However, this relationship was dependent on the interaction between provider type such that occupational therapists and physical therapists with less experience in EI reported more intervention adaptations, whereas developmental therapists with more experience made fewer intervention adaptations.

Table 3

Multivariate Linear Regression Results

	B	Std Error	t	p	F	df	p	Adj R^2
Scheduling/ Caseload					4.832	8	< .001**	.050
Years in EI	.034	.034	1.00	318				
OT	.134	.186	.721	.471				
SLP	.400	.165	2.424	.016*				
PT	.485	.234	2.075	.038*				
DT	Reference	-	-	-				
In-Person: No	.206	.047	4.417	< .001**				
In-Person: Yes	Reference	-	-	-				
Years in EI*OT	-.045	.053	-.876	.382				
Years in EI*SLP	-.090	.046	-1.951	.052				
Years in EI*PT	-.144	.061	-2.364	.018*				
Years in EI*DT	Reference	-	-	-				
Logistic Adaptations					2.156	8	.029*	.015
Years in EI	-.050	.034	-1.489	.37				
OT	.173	.185	.937	.349				
SLP	-.153	.164	-.936	.350				
PT	-.400	.231	-1.729	.084				
DT	Reference	-	-	-				
In-Person: No	-.049	.046	-1.062	.289				
In-Person: Yes	Reference	-	-	-				
Years in EI*OT	.001	.052	.017	.987				
Years in EI*SLP	.041	.046	.907	.365				
Years in EI*PT	.125	.060	2.074	.038*				
Years in EI*DT	Reference	-	-	-				

	B	Std Error	t	p	F	df	p	Adj R^2
Financial Implications					3.637	8	< .001**	.035
Years in EI	-.043	058	-.733	464				
OT	3.881	.321	.000	1.000				
SLP	.544	.285	1.909	.057				
PT	.060	.403	.149	.882				
DT	Reference	-	-	-				
In-Person: No	.272	.080	3.384	.001*				
In-Person: Yes	Reference	-	-	-				
Years in EI*OT	-.009	.091	-.104	.918				
Years in EI*SLP	-.169	.080	-2.118	.035*				
Years in EI*PT	-.003	.105	-.031	.976				
Years in EI*DT	Reference	-	-	-				
Practice Adaptations					8.437	8	< .001**	.092
Years in EI	-.066	.037	-1.778	076				
OT	-.482	.204	-2.361	.019*				
SLP	-.367	.181	-2.030	.043*				
PT	-.561	.256	-2.195	.029*				
DT	Reference	-	-	-				
In-Person: No	-.319	.051	-6.249	< .001**				
In-Person: Yes	Reference	-	-	-				
Years in EI*OT	.168	.058	2.906	.004*				
Years in EI*SLP	.091	.051	1.805	.072				
Years in EI*PT	.187	.067	2.806	.005*				
Years in EI*DT	Reference	-	-	-				

Note. *$p < .05$. **$p < .01$.

With regard to logistic adaptations, the overall model was significant with a low adjusted R^2 at .015, or 1.5% of the variance, and very few significant comparisons. The model for scheduling/caseload and financial implications scores showed a similar trend, with the overall model accounting for adjusted R^2 at .050, or 5.0% of the variance, and adjusted R^2 at .035, or 3.5% of the variance, respectively. Of interest, willingness to return to in-person EI services, regardless of years of practice or provider type, was significant for scheduling/caseload (willing to return in-person M = 2.56 vs. not willing M = 2.79, $p < .001$), financial implications (willing to return in-person M = 3.39 vs. not willing M = 3.67, $p < .01$), and intervention adaptations (willing to return in-person M = 2.40 vs. not willing M = 2.10, $p < .001$) scores.

Discussion

Many occupational therapists in EI settings began to use telehealth to work with families during the pandemic, and we have limited information about perceptions of particular service delivery adaptations that resulted from this shift. Findings from the current study suggest that the perceptions of the elements of service delivery adaptations (i.e., scheduling/caseload adaptations, logistic adaptations, financial implications, and intervention adaptations) were differentially influenced by profession, years of experience in EI, and willingness to return to in-person service delivery.

Intervention adaptations encompassed items related to coaching, going "bagless" or without toys to families' homes, serving families that have experienced service delay because of a lack of an available EI provider, and flexibility in when families are served. Research shows that coaching promotes positive outcomes, including parental knowledge and skills (King et al., 2017), parental self-competence, and children's goal attainment (Graham et al., 2016). However, EI providers consistently report difficulties in using coaching practices even with ongoing professional support (Romano & Schnurr, 2020). In addition,

evidence (Dunst et al., 2014) and Division for Early Childhood Recommended Practices (2014) points to the importance of using authentic contexts and families' everyday materials. A telehealth service delivery model demands that therapists use families' everyday materials and that caregivers be integral to sessions that may translate into increased use of coaching practices (Cole et al., 2019; Stredler-Brown, 2017). Occupational therapists, speech-language pathologists, and physical therapists reported fewer adaptations to practice with the shift to telehealth, suggesting that these providers may have been prepared to go bagless, implement coaching, and schedule times that allow for flexibility, perhaps even during families' daily routines.

Intervention adaptations were significantly different for occupational therapists, physical therapists, and speech-language pathologists as compared to developmental therapists; this relationship was also contingent on years of EI experience. It may be that occupational therapists with less experience in EI reported more adaptations because they were more commonly using strategies such as demonstration or direct prompting of the child during in-person visits and had to increase their use of family coaching via telehealth sessions. Occupational therapists are well prepared to plan and implement evidence-based and family-centered interventions in EI (Fabrizi et al., 2019). Occupational therapists are skilled at addressing all areas of development in a variety of contexts and environments to support participation in the everyday life activities of a child and family (Fabrizi et al., 2019); however, occupational therapists, like all EI providers, might benefit from additional opportunities for training and discussion of strategies for building family-focused partnerships and how to successfully implement coaching during telehealth sessions. While previous research points to the difficulties in implementing coaching, no studies to date have investigated this phenomenon with occupational therapists in EI telehealth settings only.

Intervention adaptations were more highly reported among the EI providers who preferred not to return to in-person service provision during the COVID-19 pandemic. Clearly, specific aspects of telehealth (e.g., serving families that experienced service delay because of a lack of a specific type of EI provider in their area, scheduling flexibility) were viewed more favorably by the EI providers who preferred not to deliver in-person services during the COVID-19 pandemic. Literature supports these potential advantages of telehealth intervention in EI, such as increased access (i.e., to rural or under-resourced areas) and increased scheduling flexibility (e.g., decreased cancellations) (Behl et al., 2017).

As for scheduling and caseload as well as financial implications, the most influential factor included willingness to return to in-person services. This makes sense, given that the EI providers may have fewer families on their caseload during the pandemic and/or may have to purchase additional data or faster internet to provide telehealth services or have different experiences from others. When EI providers, including occupational therapists, are experiencing financial implications because of fewer families or increased technology expenditures during the pandemic, they likely are reporting increased adaptations that are not positive. Future research may investigate the extent to which EI systems may support providers, in addition to ongoing education about best intervention practices, in pragmatic ways that include access to technology and/or data to serve families.

As telehealth is likely to continue post COVID-19 as a service delivery option, EI systems should consider how to support EI providers to implement best practice principles delivered virtually. Findings from the current study support that, on average, occupational therapists were likely implementing coaching, going bagless, and flexibility in scheduling prior to the pandemic. However, all EI providers, including occupational therapists, who are newer to working in EI might benefit from additional training and education related to using coaching and the family's everyday materials during telehealth sessions.

As telehealth is still a relatively new service delivery model for EI, providers might benefit from opportunities to participate in ongoing mentoring and support through development of communities of practice specific to EI and telehealth. The results from the current study can also contribute to advocacy for policy and reimbursement changes to continue telehealth as a service delivery option. The perceptions of the EI providers in this study support access and equity advantages of telehealth, such as increased scheduling flexibility and the ability to serve children and families who may have experienced a previous service delay.

Limitations and Future Directions

The current study was limited in that it used anonymous self-report from EI providers in a limited geographical area; future research may use a larger, national sample to understand adaptations from a shift in service delivery. In addition, the factors that influence EI providers' perceptions of service delivery adaptations are likely multifaceted and complex. Qualitative approaches may be necessary to fully capture the lived experiences of occupational therapists' adaptations to telehealth. While logistic adaptations were a natural consequence of stay-at-home orders at the onset of the pandemic, we need future research to understand how therapists are adapting to transitions to hybrid (i.e., partly in-person, telehealth) service delivery models as COVID-19 restrictions are lifted. In addition, while findings were statistically significant, future studies should delve deeper into the influence of provider type and years of experience on use of intervention adaptations in telehealth service delivery in EI to determine if ratings are clinically meaningful.

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