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OPRE Research Brief

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We Grow Together Professional Development System: Implementation with Infant-Toddler Teachers and Caregivers

The quality of infant-toddler care matters for children's development and long-term outcomes.[1] Half of all infants and toddlers receive care in nonparental settings, such as centers and family child care (FCC) homes. On average, infants and toddlers spend more hours per week in care than preschoolers do.[2] Yet infant-toddler care has been identified as lower quality than care for older children, suggesting that professional development (PD) for caregivers could improve care and interactions.[3, 4] Available research on coaching and PD has focused on teachers for preschool or school-age children, with very few studies examining PD strategies for infant-toddler caregivers.[5]

The goal of this brief is to describe the implementation of the We Grow Together (WGT) Professional Development System[6] during a field test conducted in late fall 2018 to spring 2019. WGT is a research-based PD system for caregivers working with infants and toddlers in center-based care and FCCs. As part of WGT, caregivers work with their PD providers using resources delivered through a website. The system supports caregivers in planning and using the WGT practices through relationship- and practice-based coaching. A field test of WGT examined implementation with teachers and caregivers of infants and toddlers and their PD providers in Early Head Start, FCCs, and community-based child care settings.

Box 1. We Grow Together terms

Caregivers refer to nonparental caregivers and teachers in Early Head Start (EHS), community-based child care centers, and family child care (FCC) homes.

PD providers refer to a range of early care and education (ECE) staff who provide professional development, such as managers and education directors, supervisors, mentors, coaches, employees of technical assistance (TA) networks or centers, and master teachers in the ECE setting. PD providers were either staff within caregivers' programs or employed by outside entities.

Classrooms refer to both center-based and FCC settings serving infants and toddlers.

Box 2. About the We Grow Together Field Test

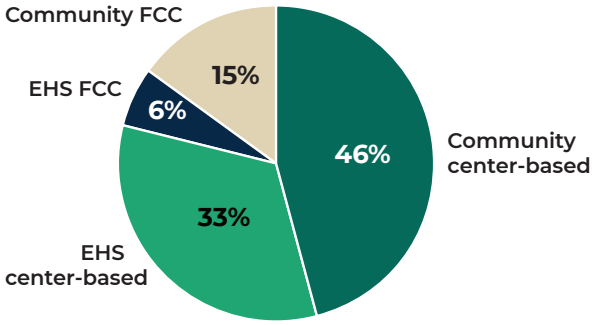
The goal of the WGT system is to improve the quality of caregiving in ECE settings by helping infant-toddler caregivers use daily interactions to support the development of young children. We designed the WGT field test to examine whether a diverse sample of caregivers, working in concert with their local PD providers, could use the WGT system to change their beliefs about and knowledge of evidence-based practices, and improve the quality of their practices with infants and toddlers. For the field test, caregivers and their PD providers used the WGT system between January and April 2019, in real world conditions. The field test used existing local PD providers and sampled from a range of early care and education (ECE) settings serving infants and toddlers across multiple localities.

We developed the field test using a pretest-posttest design. Findings from these analyses should not be interpreted as causal because we did not include a comparison group.

Pairs of caregivers and PD providers (271 caregivers received PD from 168 providers) participated in the WGT field test. These field test participants remained in the field test as of March 1, 2019, eight weeks after implementation began.[7] Their settings included 214 center-based classrooms and 57 family child care (FCC) classrooms with 105 Early Head Start (EHS) and 166 community-based classrooms. Based on the ages of the children on the day of the fall classroom observations, there were 68 infant classrooms and 146 toddler classrooms in center-based settings.[8]

This group of WGT field test participants does not represent PD providers and caregivers nationally. Therefore, readers should not use these data to draw conclusions about the experiences of PD providers and caregivers nationally. PD providers and caregivers agreed to participate in an online PD program for about four months with an additional month for PD provider remote training. All participants reported they could read materials written in English. ◢

WGT field test participants, by type of caregiver setting



Source: Fall 2018 WGT roster
EHS = Early Head Start; FCC = family child care.

Specifically, this brief addresses the following research questions:

- What tools and supports were accessed by caregivers and PD providers while participating in WGT?
  - What WGT tools did caregivers and PD providers access during implementation?
  - What WGT supports did caregivers and PD providers access while participating in WGT?
- How did caregivers and PD providers access WGT?
- Which WGT modules were recommended most frequently to caregivers and most frequently used by caregivers and PD providers?
  - Which modules were recommended to caregivers most frequently (and were there differences by setting type or affiliation)?
  - Which WGT modules did caregivers use most frequently (and were there differences by setting type or affiliation)?
  - Which WGT modules did PD providers report using with caregivers most frequently?
- What challenges and barriers did caregivers report experiencing when using WGT (and were there differences by setting type or affiliation)?

WGT is aligned with the principles and practices of the Quality of Caregiver-Child Interactions for Infants and Toddlers (QCIT),[9] an evidence-based observational measure of caregiver quality with a focus on the following domains:

- Support for Social-Emotional Development
- Support for Language and Literacy Development
- Support for Cognitive Development

The WGT system includes materials designed to enable trained local PD providers to support caregivers in learning to implement practices with the children in their care. The goal is for caregivers to adopt the evidence-based practices as habits and make these practices a regular part of how they interact with infants and toddlers.

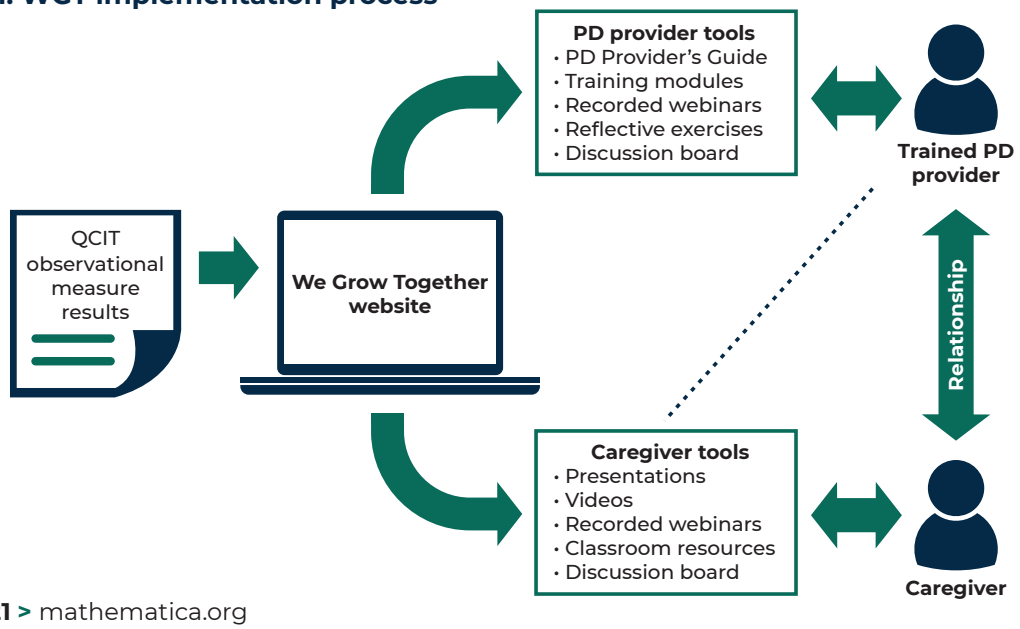
With the core content of WGT grounded in the constructs and high quality practices in the QCIT measure, we began the field test with an observation of the caregiver's classroom in fall 2018, using the QCIT measure.

Data from the QCIT observation provided a profile of areas for growth in the caregiver's practice to serve as a starting point and guide for the selection of modules for each caregiver. Based on the QCIT results, each caregiver's customized home page on the WGT website highlighted three recommended modules. Each module included three to five key practices.

Over the course of the 2018–2019 program year, we encouraged caregivers' trained PD providers to meet regularly with caregivers to support them in using the WGT tools. We supported PD providers in implementing the PD with their own set of PD provider tools. They learned how to develop SMART (specific, measurable, attainable, relevant, and timely) goals and action plans. We encouraged PD providers to recommend specific resources based on the caregiver's skills, goals, and learning preferences. Setting measurable and attainable goals is a critical component in developing a plan for quality improvement. Goals should be actionable and shared between the PD provider and caregiver.

Although we guided caregivers to the three specific modules, they coordinated with their PD providers to choose their starting module and the key practices within the modules on which to work. Once caregiver–PD provider pairs selected a module on which to focus, they set goals for practice, and caregivers worked at their own pace to implement new skills. These goals directed an active change phase, during which the caregiver and PD provider used WGT tools to develop an action plan and implement new practices. The level of intensity and duration needed to learn a key practice varied with the complexity of that practice and characteristics of the setting and caregiver (for example, the caregiver's motivation and background experience).

Exhibit 1. WGT implementation process



Box 3. Methods

Below we describe the measures used and analyses conducted for each research question. Data collection began in September 2018 and ended in July 2019.

Data collection and measures

This brief includes findings from the WGT background surveys, the WGT feedback surveys, and web use data. Both caregivers and PD providers completed the background survey in fall 2018 (at baseline) and the feedback survey in spring 2019 (after implementation was completed). From November 2018 until April 2019, we collected web use tracking data from the WGT website on both caregivers and PD providers, noting log-in frequency, tools accessed, and length of time spent on the website.

Analyses

The goal of the analyses was to describe the implementation of WGT system. We conducted descriptive analyses by examining frequencies. We conducted significance tests to identify any group differences by setting type (between center-based classrooms and FCCs) and by affiliation (between EHS and community-based settings). Differences reported in the text and exhibits are statistically significant ($p \leq 0.05$). ◢

What WGT tools did caregivers and PD providers access during implementation?

Throughout the PD process, tools on the WGT website supported caregivers and their PD providers by offering information about strategy implementation. To accommodate diversity in learning preferences, WGT provided various PD tools for caregivers (Exhibit 2).

The recommended tools highlighted for each practice included: (1) presentations with audio, (2) self-reflection activities, and (3) summary handouts. Additional WGT tools included: (1) handouts for families, (2) classroom supports, (3) step-by-step guides, (4) caregiver self-assessment checklists, (5) videos of other caregivers implementing practices, (6) child progress charts, and (7) links to other resources.

Exhibit 2. Types of WGT PD tools for caregivers

	**Brief presentations**—An introductory narrated presentation briefly reviewed the overall topic and described the key practices in the module. Each key practice had its own presentation on what it was and why, when, and how to use it, along with some examples. Each presentation also included an activity that asked caregivers to think about how to use a practice and recommended that the caregiver discuss the activity with their PD provider. We designed the presentations to guide caregivers in selecting goals.
	**Handouts**—One- to two-page handouts, including the what, why, and how of each key practice, provided a summary to share with colleagues or families to help the entire caregiving team work together.
	**Step-by-step guides and checklists**—Caregivers could use these guides and checklists to keep track of how they were using a new practice or changing a practice. We recommended that the PD provider and caregiver look through these guides and checklists together, and create an action plan for when and how to implement this practice with the children.
	**Brief videos of caregivers implementing practices**—Our video library of caregivers demonstrating practices encouraged them to think about how other caregivers implement those practices and how to apply the strategies to their own practice.

Activities and self-refection exercises—These exercises encouraged caregivers to think about the key practices and ways they might change or improve their own practice. Some of these activities involved self-recording with a project-provided iPad mini.

Classroom supports—These supports included handouts, posters, and key rings; they provided ongoing reminders of new practices that the caregiving team could look at throughout the day to enhance interactions with the children.

Progress charts—These chart templates helped caregivers track children's progress.

Caregivers and PD providers most frequently accessed the self-reflection activities tool within their recommended modules. Other frequently accessed tools included step-by-step guides, summary handouts, and handouts for families.

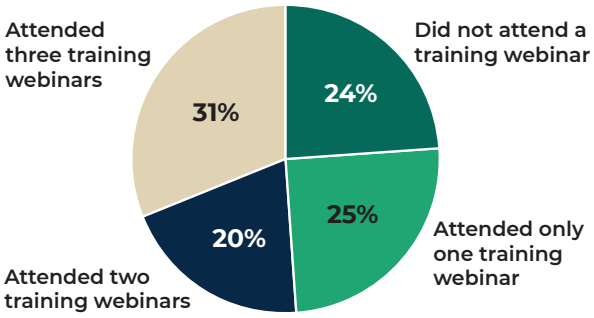
Almost all caregivers spent time reviewing materials outside of the WGT website. Of the 90 percent of caregivers who accessed an external website recommended in the Additional Resources sections, nearly all (96.3 percent) reported that they plan to use one or more of these websites again. They most commonly reported plans to use the ZERO TO THREE, Center on the Social and Emotional Foundations for Early Learning (CSEFEL), and the Center for Early Literacy Learning websites again.

What WGT supports did caregivers and PD providers access while participating in WGT?

Before implementation, the study team provided an online training for PD providers designed to orient them to the WGT system. During the training, the study team hosted three live 90-minute training webinars hosted over four weeks (between November and December 2018) to introduce WGT, demonstrate website navigation, discuss study logistics, and answer PD providers' questions. We required PD providers to attend each training webinar and offered each webinar twice to accommodate schedules. Additionally, PD providers needed to log onto the website to complete training activities in between the training webinars.

More than three-quarters (76 percent) of PD providers participated in at least one PD provider training webinar (Exhibit 3).

Exhibit 3. Attendance at WGT PD provider training webinars

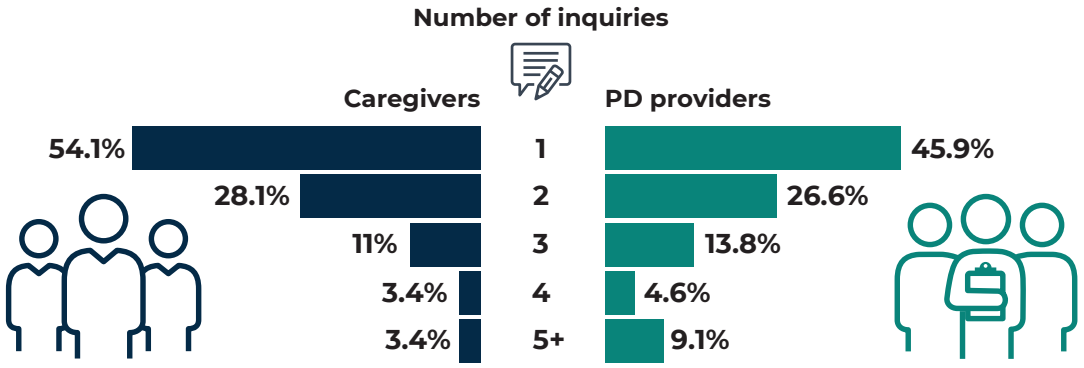


Note: This exhibit represents 168 PD providers in the sample.

Most of the caregivers and PD providers who contacted the study team did so only once (Exhibit 4). Throughout the field test, we received inquiries through our email inbox, toll-free number, PD provider webinars, PD provider office hours, and participants' contacting WGT recruiters directly. Participants who contacted the study team used the WGT inbox as their primary means of communication.

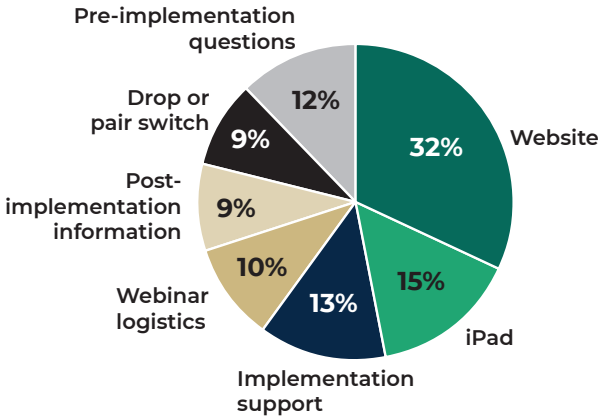
Inquiries about the WGT website and iPad were the most frequent reasons caregivers or PD providers contacted the study team (Exhibit 5). As the WGT program was getting underway, participants reached out to our team during the PD provider training in December 2018 and again when we asked participants to begin actively implementing WGT in January 2019. The most common inquiries at that time were about the website and use of the iPad. After the start-up period, inquiries became less frequent. Inquiries in February and March 2019

Exhibit 4. Frequency of inquiries by caregivers and PD providers



Source: WGT technical assistance log based on the 146 caregivers and 109 PD providers who contacted the study team.

Exhibit 5. Reasons caregivers and PD providers contacted the study team[10]



Source: WGT technical assistance log based on the 146 caregivers and 109 PD providers who contacted the study team.

tended to focus on the website and implementation support (for example, questions about time management). By April, the content of inquiries was shifting to post-implementation activities (for example, questions about the final data collection activities).

How did caregivers and PD providers access WGT?

Caregivers and PD providers accessed WGT in a variety of ways.

Almost all caregivers (93.4 percent) and all PD providers (100 percent) logged onto the WGT website at least once; however, they spent limited time on it (Exhibit 6). Website analytics indicated that caregivers spent an average of 9 minutes per week and an average of 3.9 total hours, and PD providers spent an average of 9.6 minutes per week and an average of 4.2 total hours on the WGT website during the four-month implementation period. It is possible that caregivers and PD providers may have accessed the WGT website content via other sources. For example, PD providers shared with the team that caregivers also accessed content through the PD provider's or a peer caregiver's accounts or printed out WGT materials to use offline.

Which WGT modules were recommended to caregivers most frequently (and were there differences by setting type or affiliation)?

Caregivers' initial scores on the QCIT measure were used to recommend three modules.

The Language Use module was most frequently recommended to WGT caregivers (Exhibit 7). Of the nine available modules, the three most frequently recommended modules pertained to language and literacy: (1) Support for Children's Language Use, (2) Support for Children's Understanding of Language, and (3) Support for Children's Literacy. There were no differences in recommended modules by setting type (that is, FCC caregivers versus center-based caregivers) or by affiliation (that is, EHS caregivers versus community-based caregivers) in the modules recommended to caregivers.

Box 4. Caregivers accessed the WGT website in a number of ways:

- **More than 1 in 10 caregivers (14 percent) reported that they did not have reliable access to a computer or Internet connection.**
- **Although the study included cellular Internet access through the iPad tablets provided, a majority of caregivers (81 percent) reported using Wi-Fi to access the WGT website.** Only 30.9 percent of caregivers reported using cellular service as one of the ways they accessed the WGT website.
- **Most caregivers (74.7 percent) reported preferring to use the iPad tablets provided by the study to access the WGT website.** About a third of the caregivers used a laptop computer (32.1 percent); less than a quarter used a desktop computer (22.1 percent) or a smartphone (24.1 percent) to access the website.
- **Nearly all caregivers (93 percent) attempted to video-record themselves in the classroom using the iPad provided by the study.** We recommended that caregivers video-record themselves once a week in the classroom to reflect on their practice. To support implementation of this strategy, we provided tripods for the iPads and guidance on obtaining permissions and maintaining privacy.

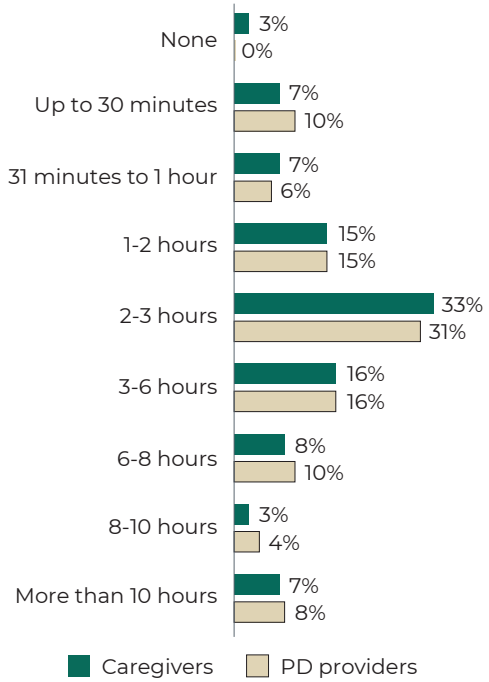
14% of caregivers **did not have reliable access** to a computer or Internet connection

81% of caregivers **used Wi-Fi** to access WGT website

75% of caregivers **preferred using study iPad** to access WGT website

93% of caregivers **attempted video-recording themselves** in their classroom using study iPad

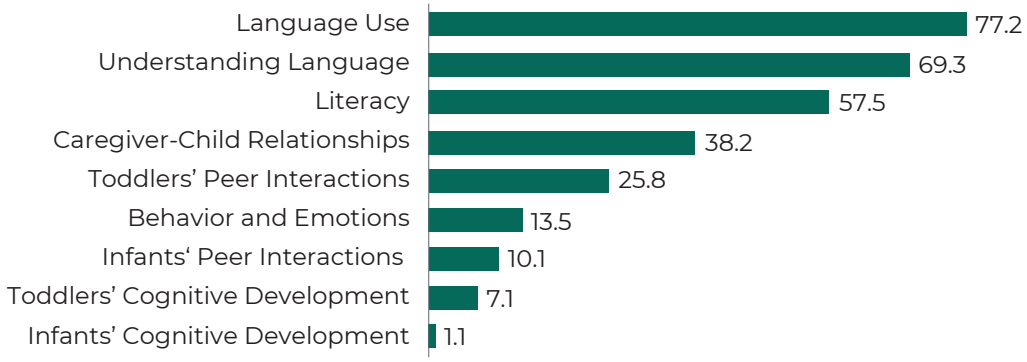
Exhibit 6. Total time caregivers and PD providers spent on WGT website from December 2018 through April 2019



Total time spent by caregivers and PD providers (percentage)

Source: WGT website analytics.

Exhibit 7. Modules recommended to WGT caregivers



Source: Spring 2019 WGT Caregiver and PD Provider Feedback Surveys.

Although caregivers' initial scores on the QCIT measure were used to recommend modules, caregivers and PD providers had flexibility in the modules they used. There were differences by setting type and affiliation in the modules used by caregivers.

Which WGT modules did caregivers use most frequently (and were there differences by setting type or affiliation)?

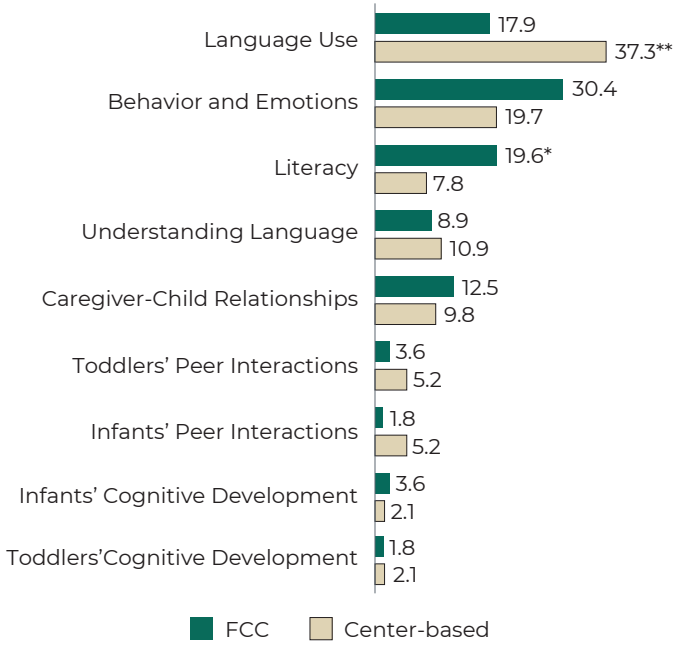
Although we guided caregivers to three specific modules on the WGT website homepage, they made decisions with their PD providers and could also access the other WGT modules if they chose. Consistent with adult learning theory and the importance of learner choice, the pairs of caregivers and PD providers collaboratively selected the first module and the key practices on which they wanted to work within that module. Once the pairs decided to move on to a new key practice, they could either select another practice within the same module or move to a new module.

Caregivers reported the module in which they spent the most time working. More than half of WGT caregivers reported that they spent most of their time in the Language Use or Behavior and Emotions modules. Nearly one-third of the caregivers spent most of their time in the Language Use module (32.9 percent) and nearly one-quarter spent most of their time in the Behavior and Emotions module (22.1 percent).

Relative to caregivers in FCC classrooms, caregivers in center-based classrooms were more likely to spend most of their time in the Language Use module and less likely to spend most of their time in the Literacy module (Exhibit 8). More than one-third of caregivers in center-based settings spent the most time in the Language Use module compared with less than one-fifth of FCC caregivers (37.3 and 17.9 percent, respectively). FCC caregivers were more likely than center-based caregivers to report spending the most time in the Literacy module (19.6 and 7.8 percent, respectively).

When examining differences by affiliation, community-based caregivers were more likely than EHS caregivers to spend the most time in the Behavior and Emotions module (27.6 and 13.4 percent, respectively, Exhibit 9).

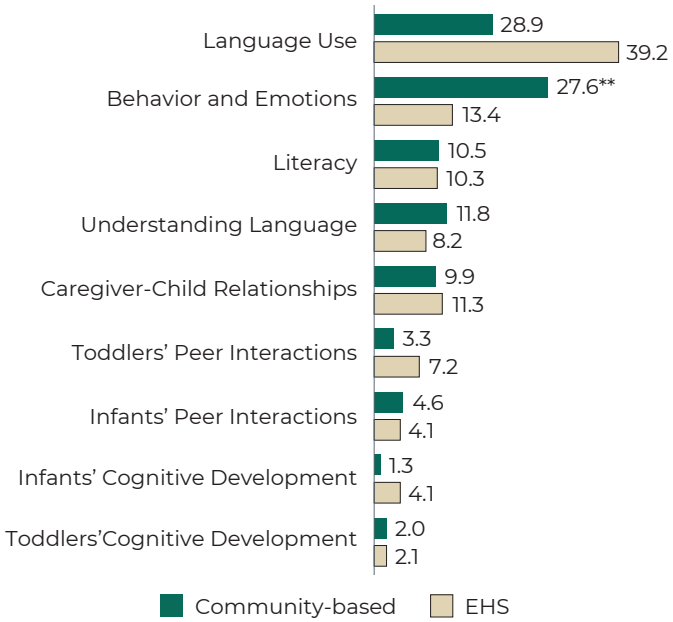
Exhibit 8. Modules most used by caregiver setting type (FCC vs. center-based)



Center-based and FCC caregiver reported use (percentage)

Source: Spring 2019 WGT Caregiver and PD Provider Feedback Surveys.
Note: *Indicates a significant difference between estimates for caregivers in each group (* p < 0.05; ** p < 0.01; *** p < .001).
FCC = family child care.

Exhibit 9. Modules most used by caregiver affiliation (community-based vs. EHS)



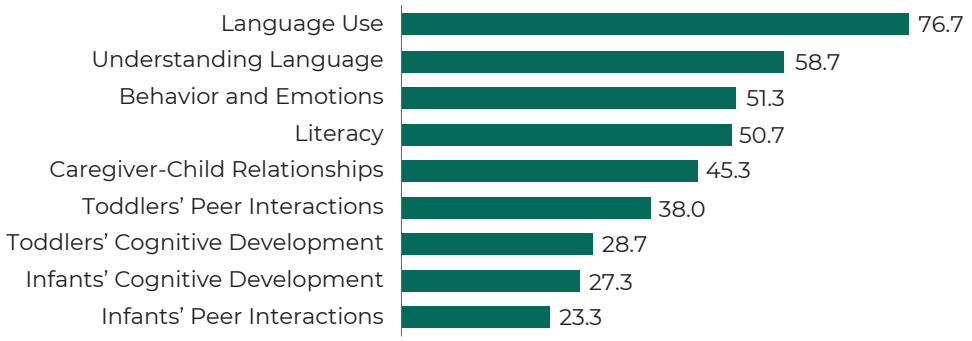
Community-based and EHS caregiver reported use (percentage)

Source: Spring 2019 WGT Caregiver and PD Provider Feedback Surveys.
Note: *Indicates a significant difference between estimates for caregivers in each group (* $p < 0.05$; ** $p < 0.01$; *** $p < .001$).
EHS = Early Head Start.

Which modules did PD providers report using with caregivers most frequently?

PD providers most commonly reported using the Language Use module with caregivers (Exhibit 10). A majority of PD providers reported using Language Use with their paired caregivers (76.7 percent), followed by the Understanding Language (58.7 percent), Support for Children's Behavior and Emotions (51.3 percent), and Literacy (50.7 percent) modules. Although more than half of PD providers said they used the Understanding Language and Literacy modules with caregivers, only about 10.4 percent of caregivers reported spending most of their time in those modules.

Exhibit 10. Modules PD providers used most with caregivers



Source: Spring 2019 WGT Caregiver and PD Provider Feedback Surveys.

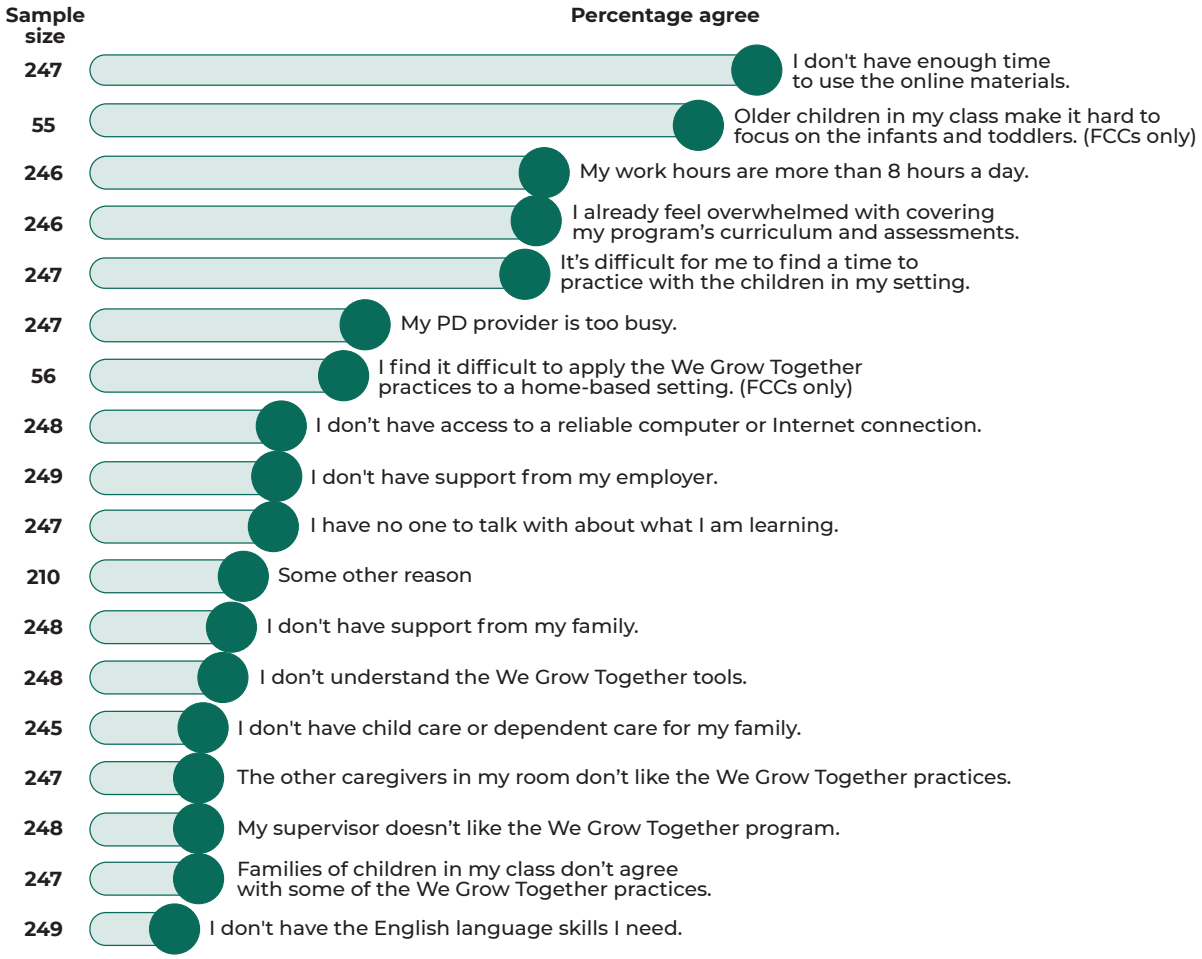
What challenges and barriers did caregivers report experiencing when using WGT (and were there differences by setting type or affiliation)?

Caregivers and PD providers reported that they experienced several challenges in using WGT.

Time was the most frequently noted barrier to participating in WGT. Caregivers noted several challenges related to time regarding participation in WGT. Although more than two-thirds of caregivers (68.2 percent) reported having paid time during work hours for staff development, the majority agreed that they did not have enough time to use the online WGT materials (56.3 percent; Exhibit 11). More than a third of caregivers reported experiencing other time-related challenges, such as working more than eight hours a day (37.4 percent), feeling overwhelmed by existing job demands (36.6 percent), and experiencing difficulties in finding time to practice WGT activities with the children in their settings (35.6 percent). Caregivers reported non-time related challenges with lower frequency. On average, caregivers reported spending 25.6 hours on other PD activities outside of WGT during the study period. PD providers also reported that time was a barrier when implementing PD: about half (50.7 percent) reported that it was difficult for them to find time to meet with their caregivers about PD, and a quarter (26.0 percent) reported that their other work responsibilities prevented them from meeting with their caregivers.

There were differences in the number of hours worked by caregivers by setting type (FCC vs. center-based) and affiliation (community-based vs. EHS; Exhibits 12 and 13). There were no differences by setting type or affiliation on any of the other challenges related to time, including not having time to use online materials, feeling overwhelmed by existing job demands, experiencing difficulties in finding time to practice WGT principles, and the PD provider being too busy.

Exhibit 11. Caregivers most commonly reported challenges in having enough time to participate in WGT activities



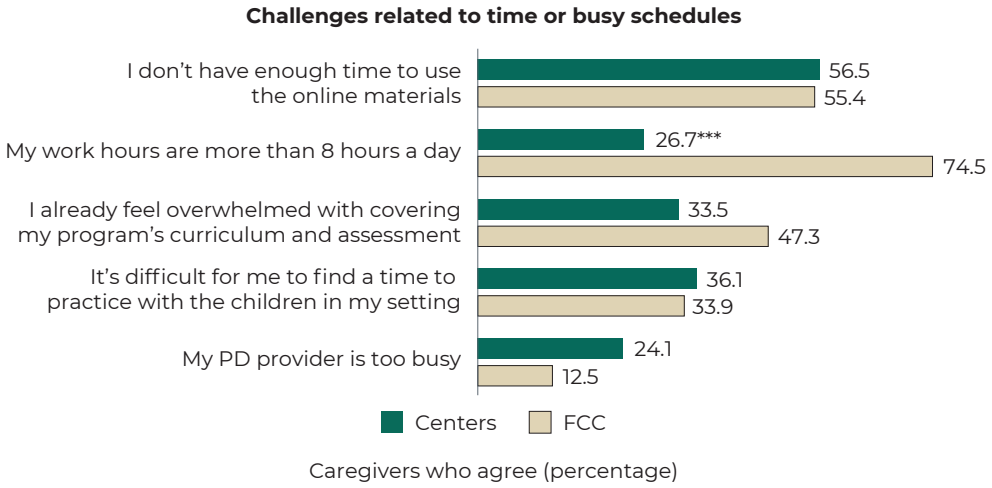
Source: Spring 2019 WGT Caregiver Feedback Survey.
FCC = family child care

About half of the FCC caregivers (50.9 percent) indicated that older children in their classrooms made it hard for them to focus on infants and toddlers; one-fifth (19.6 percent) reported that they found it difficult to apply the WGT practices in a FCC setting. We asked these two questions only of FCC caregivers.

More FCC caregivers reported a lack of support from their family as a challenge compared with center-based caregivers (19.6 percent compared with 6.8 percent). Both EHS and community-based caregivers reported this challenge with about the same frequency. Less than 15 percent reported other non-time related challenges (Exhibit 11) and the frequency did not differ by setting type or affiliation.

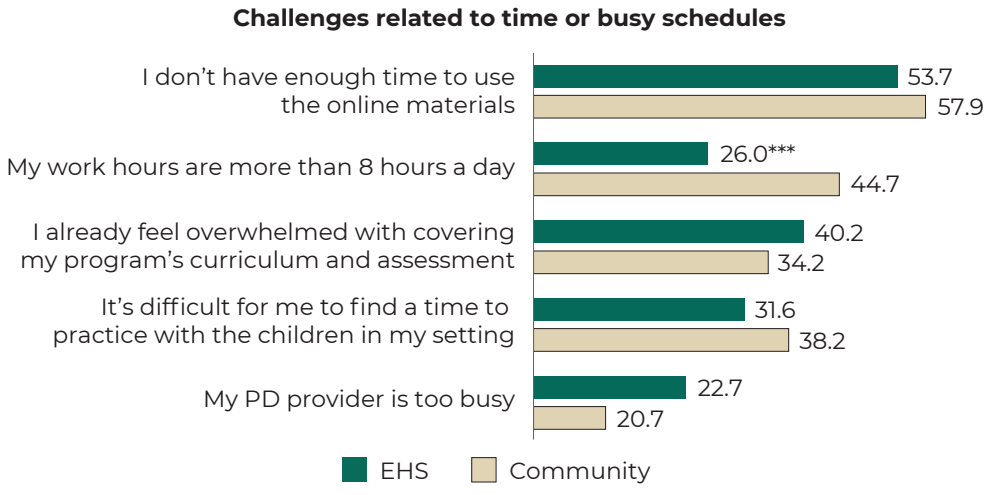
Visit the project website for more information about findings from the WGT field test including The We Grow Together Professional Development System: Final Report of the 2019 Field Test

Exhibit 12. Caregivers in FCCs were much more likely than those in center-based settings to cite working more than eight hours a day as a reason why participating in PD activities such as WGT was difficult



Source: Spring 2019 WGT Caregiver Feedback Surveys.
Note: *Indicates a significant difference between estimates for caregivers in each group (* $p < 0.05$; ** $p < 0.01$; *** $p < .001$).
FCC = family child care

Exhibit 13. Community-based caregivers were also more likely to report working more than eight hours a day compared with their EHS counterparts



Source: Spring 2019 WGT Caregiver Feedback Surveys.
Note: *Indicates a significant difference between estimates for caregivers in each group (* $p < 0.05$; ** $p < 0.01$; *** $p < .001$).
EHS = Early Head Start

Endnotes

[1] Vandell, D.L., J. Belsky, M. Burchinal, L. Steinberg, N. Vandergrift, and NICHD Early Child Care Research Network "Do Effects of Early Child Care Extend to Age 15 Years? Results from the NICHD Study of Early Child Care and Youth Development." *Child Development*, vol. 81, no. 3, 2010, pp. 737–756.

[2] Forry, N., R. Madill, E. Shuey, T. Halle, G. Ugarte, and J. Borton. "Snapshots from the NSECE: How Much Did Households in the United States Pay for Child Care in 2012? An Examination of Differences by Child Age." OPRE Report #2018-110. Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, 2018.

[3] The QCIT was formerly known as the Q-CCIIT. Atkins-Burnett, Sally, Shannon Monahan, Louisa Tarullo, Yange Xue, Elizabeth Cavadel, Lizabeth Malone, and Lauren Akers. "Measuring the Quality of Caregiver-Child Interactions for Infants and Toddlers (Q-CCIIT)." OPRE Report #2015-13. Washington, DC: U.S. Department of Health and Human Services, Administration for Children and Families, Office of Planning, Research and Evaluation, 2015.

[4] IOM and NRC. "Transforming the Workforce for Children Birth Through Age 8: A Unifying Foundation." Washington, DC: The National Academies Press, 2015.

[5] Aikens, N., L. Akers, and S. Atkins-Burnett. "Professional Development Tools to Improve the Quality of Infant and Toddler Care: A Review of the Literature." OPRE Report #2016-96. Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, 2016.

[6] Atkins-Burnett, Sally, Louisa Tarullo, Shannon Monahan, Felicia Hurwitz, Timothy Bruursema, Ann Li, Elizabeth Blesson, Judy Cannon, Ayesha De Mond, and Anna Heckler. "The We Grow Together Professional Development System Final Report of the 2019 Field Test." OPRE Report #2020-170. Washington, DC: Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, 2020.

[7] The field test participant pairs included in analysis comprise all caregivers who remained in a caregiver–PD provider pair, completed either the background survey or the fall 2018 QCIT observation, and remained in the field test at least until March 1, 2019. In the final report, we refer to this group as the "final analytic sample."

[8] We used the classroom roster from the day of the QCIT observation to determine whether the majority of the children were younger than 18 months (infant classroom) or 18 months and older (toddler classroom).

[9] The QCIT was formerly known as the Q-CCIIT. Atkins-Burnett, Sally, Shannon Monahan, Louisa Tarullo, Yange Xue, Elizabeth Cavadel, Lizabeth Malone, and Lauren Akers. "Measuring the Quality of Caregiver-Child Interactions for Infants and Toddlers (Q-CCIIT)." OPRE Report #2015-13. Washington, DC: Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, 2015.

[10] Category definitions:

Pre-implementation activities: Includes questions about the background survey. Other issues include inquiries about field test gift cards, address changes, informed consent questions, and QCIT observation scheduling.

Implementation support: Includes questions about training schedules, timing of meetings, materials available, giving feedback, time management, using SMART goals/action plans, ideas for how to support caregivers, questions about activities during the implementation received from caregivers and PD providers, or module content.

Post-implementation activities: Includes questions about the feedback survey, QCIT observation scheduling, keeping the materials, and accessing the website beyond the study period.

iPad: Includes questions about Apple ID log in, disabled iPads, iPad updates, apps, and keeping the iPad beyond the study period.

PD provider webinar: Includes questions about webinar attendance, registration, recordings, or call/log in.

Website: Includes questions about technology (how to log onto website, password issues), pop-up survey, or navigation issues within the website. Specifically, participants asked about login, loading videos, downloading PDFs, navigating the site, or viewing the pop-up surveys.

Drop or pair switch: Includes questions about leaving the program or study (drops), potential drops, or PD providers/caregivers switching pairings.

Other: Includes questions about Moodle learning software profile change requests, replacement materials, and requests to be removed from reminder emails.

Lessons learned for enhancing the WGT system and providing professional development to infant and toddler caregivers

Findings from this web-based, coaching-supported approach to PD yield important lessons for enhancing the WGT system and identifying directions for future work related to providing PD to infant and toddler caregivers.

- Both caregivers and PD providers most frequently reported time as a barrier to participating in PD. Future work could investigate strategies to ensure that caregivers have the time needed to fully engage with the PD system. For example, more time might be made available by providing additional supports and incentives and/or aligning WGT with existing system PD requirements and supports. FCC caregivers may need more support from local networks or PD providers in how to make time available for PD.
- PD providers and caregivers used a variety of technological and non-technological tools and supports that the team made available to them. This finding indicated that although technological tools, such as reliable internet and device access are important factors for a web-based PD approach, it is also important to supplement them with non-technology solutions (for example, printed materials or in-person rather than video-based observations) and technological support (for example, a phone help line to supplement videos and printed guides on how to access the system). Future work could also examine alternate forms of providing PD support (for example, using virtual versus in-person PD support) and whether a PD provider could support a whole teaching team or setting rather than providing one-on-one support to a single caregiver in a classroom, as we tested here.

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