Using Behavior Skills Training to Promote Caregivers' Generalized Skill Instruction with Adults with Intellectual and Developmental Disabilities

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Shawn Nicole Girtler

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Dr. Jennifer J. McComas

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Abstract

The presence of independent and functional living skills increases autonomy and predicts better outcomes for adults with intellectual and developmental disabilities (IDD). Teaching caregivers to successfully teach functional living skills is an indirect way to positively impact the lives of adults with IDD. Behavior skills training (BST) is an evidence-based approach to training caregivers and provides a blueprint for systematic skills training. This study uses a multiple probe design across caregivers to evaluate the effectiveness of BST delivered via telehealth on the generalization of caregiver teaching skills and improvement in functional living skills of adults as a result of the skill instruction they receive. Additionally, the adult with IDD participants in this study selected the functional life skills they learned. Using person-centered practices, such as including participant interest and preference, can assist caregivers in learning generalizable skills to teach functional living skills that are selected by, important to, and important for the learner. Study results suggest that this approach effectively teaches caregivers generalizable skills.

Keywords: caregiver training, functional living skills, generalization, adults with IDD

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Chapter 1

INTRODUCTION

Functional living skills are essential to community participation (Sparrow et al., 2005). The presence of independent and functional living skills predicts better adult living outcomes for individuals with intellectual and developmental disabilities (IDD; Kim & Dymond, 2020). Examples of functional living skills include, but are not limited to, hygiene, employment, home care, and community access skills (Hong et al., 2017). Functional living skills are also critical to an individual's ability to live independently (Ioanna, 2020). Only 12% of adults with IDD who receive long-term support and services live in their own homes (i.e., a home they own or lease), and 61% live in their family homes. In comparison, 23% live in a group setting, where they and other residents rely on residential caregivers for support (approximately 4% of living arrangement data were missing; Residential Information Systems Project, 2022). When it comes to employment, individuals with IDD are often placed in sheltered employment situations that do not maximize their opportunities for developing or applying functional living skills (Hagner et al., 2012).

Every individual, regardless of ability, has the right to human dignity (The United Nations; 2006) and therefore deserves to be an active, involved member in their community where they can lead an independent and inclusive life to the best of their ability. Thus, teaching caregivers, including parents and guardians and direct care staff, to successfully teach functional living skills is an indirect way to positively impact the lives of adults with IDD. Additionally, whenever possible, teaching skills in the natural environment is essential to promote skill generalization for both the caregiver and the

person receiving services (PRS; i.e., an adult with IDD; Bolton & Mayer, 2008; Shawler et al., 2022; Stokes & Baer, 1977). However, on-site, evidence-based caregiver training is not always attainable due to cost, time constraints, and staff availability (Parsons et al., 2012).

In a review of individualized habilitation plans, which are plans that include short-term objectives intended to assist the individual in reaching long-term goals (Legal Advocacy for Persons with Developmental Disabilities, 1988) of adults with IDD in group homes, Stancliffe et al. (2000) found that only 14% of objectives reviewed were taught within the natural environment. The employment and independent living outcomes for individuals with disabilities are not promising; employment, independent living, and social outcomes for individuals with intellectual or developmental disabilities are poor compared to their peers without IDD (Hagner et al., 2012; Queirós et al., 2015). This study will discuss the prospect of delivering BST via telehealth to maximize caregiver training potential by promoting generalizable teaching strategies to improve the independent living skills of adults with IDD in both community settings.

Functional Living Skills

Functional living skills are essential to increase independence in daily life and can span a vast range of skill areas (Sparrow et al., 2005). Hygiene, toileting, cooking, transportation, and budgeting are functional living skills (Edemekong et al., 2021). The functional living skill repertoire of one individual may be completely different from the functional living skill repertoire of another individual. Person-centered practices can assist caregivers in selecting goals related to functional living skills that are important *to and for* a PRS (Minnesota Department of Human Services, 2022). Further, caregivers

should carefully consider what is essential to a PRS rather than focusing primarily on what is vital for the PRS.

Behavior Skills Training

Behavioral Skills Training (BST) is an evidenced-based performance- and competency-based approach to training caregivers (Parsons et al., 2012). BST offers a clear prescription for concise staff training focusing on feedback, performance, and individualized outcomes for staff and the individuals they serve. As described by Parsons and colleagues (2012), the specific steps of BST are to (1) provide a rationale for the use of the specific intervention, (2) describe the steps of the intervention, (3) demonstrate/model the intervention, (4) require the trainee to practice performing the intervention, (5) observe and record performance of the intervention using a treatment fidelity checklist, (6) provide corrective feedback regarding intervention implementation, and (7) repeat steps 5-7 until the trainee has reached mastery.

Two essential features of BST, according to Parsons et al. (2012), are caregiver performance and competency-based training. Performance is critical to demonstrate skill acquisition with procedural fidelity and to ensure consistent application of the learned skill. Competency in skill instruction is required to ensure that the targeted procedures and skills are demonstrated at the level necessary for mastery. These components make BST unique compared to other staff training methods (Parsons et al., 2012). One major benefit of BST is the consistency of staff training across trainers and trainees, allowing for equitable implementation and measurement of intervention training and implementation fidelity (McGimsey et al., 1995; Parsons & Reid, 1995).

BST has been implemented in a variety of locations, including schools (Parsons & Reid, 1999; Stahmer et al., 2015), clinics (Page et al., 1982), and residential settings (Macurik et al., 2008; Sarokoff & Sturmey, 2004). Skills taught through BST include but are not limited to skills training, communication skills, and behavior reduction procedures (Parsons et al., 2012). Improving caregiver performance via BST has been demonstrated in teaching skills through discrete trial training (Catania et al., 2009; Clayton & Headley, 2019; Sarokoff & Sturmey, 2004; Smith, 2001) and teaching functional analysis procedures (Ward-Horner & Sturmey, 2012). Additional skills, such as the Picture Exchange Communication System (PECS), have been successfully taught using BST (Rosales et al., 2009). Further, there is preliminary evidence of the effectiveness of BST in teaching caregiver training skills remotely via telehealth (Pellegrino & DiGennaro Reed, 2020; Tomlinson et al., 2018).

Generalization of Skills

Generalizing skills across contexts often requires strategically planned intervention to ensure success (Baer, 1999; Stokes & Baer, 1977). When conducting staff training to promote generalization, systematic planning should include specific behavioral expectations (Baer, 1999; Stokes & Baer, 1977), like behavioral expectations described in the BST steps. The "train and hope" model of generalization, in which skills are taught, but generalization is not proactively considered or utilized, may be used frequently in skills training but does not promote skill generalization (Stokes & Baer, 1977). Instead, Stokes and Osnes (1989) suggested planning to generalize by employing specific generalization tactics. The generalization tactics presented by Stokes and Baer include but are not limited to diversifying exemplars, using materials found within the

relevant context, and utilizing natural reinforcement contingencies. Not only are generalization tactics applicable to skill generalization for persons receiving services, but they are also practical strategies to promote skill generalization for caregivers.

Skill generalization is often considered for the PRS, with less emphasis or consideration of caregiver skill generalization. Instead of focusing only on generalizing skills for the PRS, caregiver training should also focus on generalizing teaching strategies to promote lasting, meaningful, and generalizable caregiver skills. Staff training that focuses on the generalization of staff skills is more effective as it allows the staff member to apply previously learned skills to either new functional living skills or to teaching another PRS. The ability of caregivers to generalize learned strategies enhances staff training by reducing the time commitment and increasing the PRS contact with effective evidence-based teaching strategies (Parsons et al., 2012).

A direct outcome of *effective* caregiver training is procedural fidelity, which, in turn, improves outcomes for the PRS (Stahmer et al., 2015). Along with improving procedural fidelity, if arranged carefully, BST also can promote maintenance and generalization of the learned procedures across behaviors, individuals, and locations (Pellegrino & DiGennaro Reed, 2020; Rosales et al., 2009). Rosales et al. (2009) applied BST procedures to implement the Picture Exchange Communication System (PECS) and measured the maintenance and generalization of acquired communication skills. The researchers conducted both generalization and maintenance probes without additional training or direction. Generalization was assessed by observing caregivers' performance of PECS procedures with an additional adult with IDD. Maintenance probes were conducted for 1-month post-training. The caregiver participants in Rosales et al.

demonstrated maintenance of PECS procedures and generalization of PECS procedure implementation with an adult with IDD. Although the comprehensive implementation of BST requires a time commitment, the results of preliminary studies suggest that the direct benefits of BST may outweigh the initial time investment, mainly if the procedures result in generalization and maintenance (Parsons et al., 2012; Rosales et al., 2009).

Telehealth

With the continuous evolution of technology, increased availability, and accessibility, conducting assessment and intervention remotely via telehealth is increasingly possible, affordable, and reliable (Lindgren et al., 2016). A growing evidence base has shown telehealth to be an effective tool for providing access to cost-effective treatment and care to individuals, regardless of location (Lindgren et al., 2016). During the COVID-19 pandemic, telehealth grew across all healthcare areas, increasing availability and usability for practitioners and those receiving services (Duff et al., 2020). Telehealth may be a promising service-delivery model to teach effective teaching strategies to caregivers of adults with IDD within a more natural environment than a clinic setting. The natural environment may be their home, community setting, or work environment. The goal for adults with IDD is to expand functional living skills to increase independence and autonomy within the natural environment (Gilson et al., 2017; Price et al., 2018). Additional research is required to examine telehealth as an effective service delivery mechanism for caregiver skills training that focuses on generalizing their teaching procedures.

Future Directions

BST is a robust approach to training caregivers to implement skill training. Although there is preliminary evidence that BST leads to the generalization and maintenance of caregivers' skills, research is warranted on the generalization and maintenance of skills taught using BST to caregivers via telehealth. In particular, research is needed to examine the generalized effects of BST procedures with paid caregivers of adults with IDD. The implementation of generalizable teaching procedures by caregivers is expected to increase the independence of the PRS across multiple functional skills, promoting autonomy and participation in their daily life. The next chapter will provide a critical review of the existing literature in the areas of functional living skills of adults with IDD to provide the foundation for the following research question: What are the effects of remotely delivered BST for caregivers on systematic skill instruction across taught and novel functional living skills for adults with intellectual and developmental disabilities?

Chapter 2

LITERATURE REVIEW

Caregivers of individuals with IDD must learn applied skills to teach effectively people receiving services (Wood et al., 2007). Teaching generalizable applied skills to caregivers is a potential strategy to increase the efficiency of caregiver training. When caregivers generalize skills, they perform them in similar situations without additional training, thus decreasing the overall training time required (Parsons et al., 2012). Although teaching functional living skills has been an aim of several studies, the specific target of *skill generalization* still needs to be improved. This chapter will review the literature pertaining to generalizable skills for teaching functional living skills to individuals with IDD via BST.

The direct support workforce, comprised of caregivers who provide direct support to PRS, has experienced increased caregiver turnover and decreased job satisfaction since the COVID-19 pandemic (Pettingell et al., 2022). The national turnover rate for direct support caregivers is 42.8%. Low wages and not receiving support in their position are common reasons for turnover (Galindo et al., 2021). In Minnesota, the starting median wage of a caregiver is $12.82 an hour; after one year of employment, this median wage increases to $13.15 an hour (Minnesota Department of Human Services, 2020). Since the COVID-19 pandemic, the median wage has increased to $15.00. However, only 30% of caregivers surveyed by Pettingell et al. reported a wage increase, and 54% reported that their work life has worsened (Pettingell et al., 2022).

The need for caregivers is expected to increase, with projected job growth for direct support caregivers of 26% (Workforce Data Center, 2021). This projected growth

would add approximately 7 million jobs to the workforce by 2029 (Workforce Data Center, 2021). To combat high caregiver turnover and increase support for caregivers, systematic instructional procedures (i.e., BST) and tactics to promote response generalization can be programmed into caregiver training, starting with the onset of initial training and continuing throughout employment.

Response Generalization

Response generalization occurs when a learned behavior occurs in situations or conditions that were not explicitly taught (Stokes & Baer, 1977). Although response generalization without detailed planning or programming is a welcome outcome of staff training, staff trainers should not rely on this "train and hope" (Stokes & Baer, 1977) approach to response generalization. Instead, Stokes & Baer encourage researchers to actively program for response generalization using one of seven tactics to program for response generalization: (1) introduce to natural maintaining contingencies, (2) train sufficient exemplars, (3) train loosely, (4) use indiscriminate contingencies, (5) program common stimuli, (6) mediate generalization, and (7) train to generalize. BST inherently utilizes the tactic of *mediating generalization* in the form of written instructions. The following sections include descriptions of the three generalization tactics that were involved in the current study: *introduce to natural maintaining contingencies, program common stimuli, and train sufficient exemplars*, into caregiver training.

One dependable tactic for promoting response generalization is introducing the desired response to natural maintaining reinforcement contingencies. Natural contingencies occur when the learner performs the skill and receives reinforcement that occurs naturally within the environment. For example, a natural occurrence of preparing a

meal is eating the meal. Natural contingencies are typically the easiest to plan for because they occur naturally within the environment, are readily available, and should be utilized over contrived reinforcement contingencies. An example of programming natural contingencies during caregiver training is providing in-situ training in the caregiver's work environment where they contact the reinforcers for performing the skills, in this case, the PRS demonstrating improvement in the target behavior and associated increases in PRS' autonomy. There is value in didactic training to introduce and learn skills. However, whenever possible, caregiver training should extend to the work environment to provide opportunities for the caregiver to contact natural reinforcers and contingencies. The response generalization tactic of introducing natural maintaining contingencies is rarely used in organizational behavior management research (Conard et al., 2016). Conard et al. suggest this is likely because caregiver training is often used with adults with sophisticated verbal skills, and strategic exposure to naturally maintaining contingencies may not be necessary (Conard et al., 2016). However, recruiting natural contingencies, such as positive attention and increased success of learners paired with praise from supervisors, may be necessary (Stokes & Osnes, 1989), mainly if praise does not function as a durable reinforcer for the caregiver or occurs at rate insufficient to increase desired caregiver behavior.

Programming common stimuli is another response generalization technique and involves including stimuli that are commonly encountered in the natural or performance setting (i.e., the generalization setting) into the training setting (Stokes & Baer, 1977). In-situ training is a natural way to include natural stimuli into the training environment because when the natural setting is the training environment, task/skill related items or

other stimuli are naturally present. If training occurs outside of the natural setting, trainers should consider where a new skill will need to be performed and include relevant stimuli from the natural environment into the training setting. For example, training might be arranged to include task materials and data collection systems a caregiver would use in the natural environment.

Train sufficient exemplars refers to the response generalization technique of teaching a skill using a variety of stimuli to promote learning and response generalization of the response that could include variations on how the stimuli appear or what they sound like (Stokes & Baer, 1977). Training sufficient exemplars during caregiver training might involves training with a variety of PRS, data collection using a variety of formats, or a variety of task materials (e.g., various microwaves for teaching a PRS to prepare a snack). Arranging diverse training environments enables the caregiver to perform effectively when they encounter variations of stimuli in the natural environment. Taken together, these response generalization tactics increase the likelihood that a caregiver will perform learned skills accurately and t independently across generalized situations.

Mediating generalization is a response generalization technique in which the learner utilizes a stimulus during training /instruction that is a 'reminder' of sorts for use in the natural setting (Stokes & Baer, 1977). This mediating stimulus could be vocal or spoken language, such as a mnemonic, or a physical object, such as a wallet size card with key information on it, a training guide, or a cellphone application. Along with mediating response generalization, Stokes and Baer also encourage generalization training by treating generalization as any other operant response. Learners should be told of the expectation to generalize and be reinforced for generalized responding. In caregiver

training, this requires that caregivers are told that they are expected to demonstrate (generalize) skills with more than one PRS and in various locations and should also be reinforced for demonstrating generalized behaviors.

Programming for response generalization has been examined in studies for unpaid and paid caregivers. Unpaid caregivers include parents, grandparents, siblings, and other family members. Paid caregivers include direct support professionals, behavior technicians, teachers, paraprofessionals, and other caregivers working with PRS as their career. The reinforcement contingencies and learning environments differ significantly across paid and unpaid caregivers. It is essential to consider the mediating factors of caregiver performance on learned skills across paid and unpaid caregivers, especially regarding caregiver skill generalization. The research on training unpaid caregivers provides valuable strategies and caregiver training procedures. However, the participants in the study are paid caregivers, therefore the descriptions and references that follow will be specific to paid caregivers only.

Generalization of Paid Caregiver Skills

The types of skills taught in paid caregiver research have varied, but much of the research has focused on discrete trial training procedures (Aherne & Beaulieu, 2018; Bolton & Mayer, 2008; Lafasakis & Sturmey, 2007) and naturalistic developmental behavioral intervention (Mrachko et al., 2023). Common generalization strategies used in caregiver training research for paid caregivers include introducing natural maintaining contingencies (Bolton & Mayer, 2008; Smith et al., 1992), training sufficient exemplars (Ducharme & Feldman, 1992), and programming stimuli to mediate generalization (Bolton & Mayer, 2008).

Selecting behaviors that will occur in the natural environment that come in contact with existing natural contingencies are essential to consider when teaching any skill (Brown et al., 2016), and caregiver training is no exception. Naturally-existing contingencies in staff training include the consequences for performing the learned skill(s) the natural environment with the PRS and are likely to involve improvements in the PRS' target behavior or autonomy. Programming for response generalization by introducing the new response repertoire to the natural maintaining contingencies can be a practical and effective approach to teaching caregivers to implement skills in the natural environment (Bolton & Mayer, 2008; Huberman & O'brien, 1999). However, some qualities of natural environments may require more than just introducing the natural maintaining contingencies.

Environmental variables specific to the target response generalization settings should be considered when designing intervention strategies and planning for response generalization (Allyon & Azrin, 1968). Smith et al. (1992) conducted a two-part study to measure the acquisition and response generalization of skills for caregivers working in a group home for adults with autism. In study 1, there were two experimental groups. The experimental group participated in an intensive 1-week workshop in which the caregivers learned and practiced behavioral procedures (e.g., shaping verbal imitation skills). The control group consisted of caregivers who worked in the group home but did not participate in the workshop. The workshop included response generalization tactics such as role-playing sessions with performance feedback. The results indicated that the experimental group performed more skills during one-on-one teaching and role-play

sessions more than the control group, whereas there was no difference between the control and experimental groups in performance on the written test of knowledge.

Smith et al.'s (1992) study 2 examined whether the caregiver skills generalized to the natural environment (i.e., the group home) and the effects of caregiver behavior on behavior change (i.e., skill acquisition and behavior reduction) of the PRS living in the group home. The results of Study 2 were inconclusive. The authors stated that although caregivers could implement behavior reduction procedures during the workshop, the strategies could have been more effective in changing PRS behavior in the natural environment. Procedures that may have hindered caregiver skill generalization included: (1) the workshop was held at an off-site location and not at the group home where the trained skills would be implemented with the PRS, (2) the workshop was not comprehensive and did not include all of the skills that the caregiver would need to learn and perform at the group home, (3) caregivers did not have an empirical knowledge base of the skills before they started the workshop, (4) the caregivers learned the skills with clients who were not group home clients with comparable skills and needs, and (5) lack of ongoing training and support to maintain skills that were learned in the workshop to the natural environment. The environmental variables specific to generalization settings that could have been used for response generalization, as demonstrated in Smith et al., included the specific and unique features of the group home (common stimuli, multiple exemplars), the skills that the caregivers needed to learn to successfully teach and support the PRS living in the home (natural maintaining contingencies) and characteristics of the PRS themselves (common stimuli).

Train sufficient exemplars or general-case training (GCT; Neef et al., 1990), a similar strategy used in generalization research, allows the caregiver to encounter as many variations of stimuli or response requirements as possible (Ducharme & Feldman, 1992). For example, the caregiver may learn to respond to pre-selected scenarios (e.g., a variety of types of toothbrushes, a variety of types of toothpaste dispensers) during a specific routine, such as brushing teeth. Planning for the caregiver to encounter these various examples during training will increase the likelihood of the behavior occurring later in a generalized setting (Sprague & Horner, 1984; Alaimo et al., 2017).

Programming common stimuli to mediate generalization is a strategy that is easy to implement during caregiver training. For example, Bolton & Mayer (2008) implemented familiar teaching materials (i.e., previously used in the setting and familiar to the caregiver participants), such as stimuli, data sheets, and program books during both training and generalization sessions. The use of the familiar teaching materials facilitated generalization through the generalization tactic of programming of common stimuli. Caregiver participants generalized not only across treatment settings but also to different PRS while maintaining over time.

Behavior Skills Training

BST is an effective method for teaching a wide variety of skills to caregivers, including implementing activities of daily living (Preas & Mathews, 2021), teaching social skills (Dogan et al., 2017), and strategies to increase the variety of foods consumed by a PRS (Alaimo et al., 2017). BST has also been successfully applied in many settings, including classrooms (Homlitas et al., 2014), supported work environments (Palmen et al., 2010), and the homes of PRS (Dogan et al., 2017). Although many of these studies

tested for the generalization of skills, only a fraction of the studies contained a description of the specific generalization strategies implemented.

An advantage of BST is that at least one response generalization strategy is built into its intended application. Within BST, the caregiver receives performance observation and corrective feedback and must repeat implementation steps until they attain mastery criterion. Additionally, providing written intervention steps supports the caregiver in mediating their skill generalization. When considering a caregiver training package that utilizes effective generalization strategies, the BST protocol should include relevant elements related to generalization.

Response generalization is not a passive phenomenon out of the control of a caregiver trainer but instead an active part of caregiver training (Stokes & Baer, 1977). When considering promoting response generalization during staff training, it is important to understand which functional variables will contribute to its success in various situations (Stokes & Osnes, 1989; Allen & Warzak, 2000). A limited number of studies have utilized response generalization strategies successfully in caregiver training to teach meaningful skills such as social skills training (Beaumont & Sofronoff, 2008) and implementation of behavior management packages (Allen & Warzak, 2000; Smith et al., 1992) with varying results.

Paid Caregiver Training

Paid caregivers, such as Direct Support Professionals (DSPs) and Personal Care Attendants (PCAs), provide direct and constant care for individuals with IDD in their homes and in the community; they provide more direct care than any other paid service provider (Pingo et al., 2020). High-quality direct caregiver training is important to

increase caregiver retention, and with high turnover rates (Pettingell et al., 2022) and insufficient staffing (ANCOR, 2022; Larson & Hewitt, 2012), caregiver training must be not only effective but also efficient.

Each human service organization provides its own unique training program (Larson & Hewitt, 2012), created based on state-required training for paid caregivers, availability of trainers, and resources to teach various important skills. The lack of caregiver skills required to provide direct care work can negatively impact job satisfaction and position turnover (Hewitt et al., 2000; Pettingell et al., 2022). Online training programs can be useful for rapidly training a large number of paid caregivers; however, competency-based training that requires the paid caregiver to practice skills in-situ and receive performance feedback, strategies that are inherent to BST, have been cited as a promising practice for DSPs (Hewitt & Larson, 2007; Larson & Hewitt, 2012).

The implementation of in-situ caregiver training conducted via telehealth can provide the opportunity for paid caregivers to learn and practice meaningful and generalizable skills in their work environment and with the individuals they serve. Additional research is needed to examine the use of generalization tactics in caregiver training packages. Specifically, additional research is needed to examine the effects of BST with tactics to promote response generalization of paid caregiver training for teaching meaningful skills to adults with IDD. Activities of daily living or functional living skills are examples of meaningful skills that can increase an individual's independence, autonomy, and community participation.

The current study uses a multiple probe design across caregivers to evaluate the effectiveness of BST plus response generalization tactics delivered via telehealth on (a)

caregiver use of effective teaching procedures, (b) generalization of caregiver teaching skills, and (c) improvement in functional living skills of adults with IDD. The results of this study could provide a BST blueprint that demonstrates an effective training program for caregivers that results in their effective and generalized instruction of functional living skills for persons receiving services in their residential settings. Therefore, the research question driving this study is: What are the effects of remotely delivered BST, including tactics to promote caregivers' generalization, on caregivers’ systematic skill instruction across taught and novel functional living skills for adults with intellectual and developmental disabilities?

Chapter 3

METHODS

Participants

Caregiver participants were included in the study if they were direct care staff who spoke English and provided direct service to adults with an intellectual or developmental disability (participants receiving services) at the non-profit, community learning and inclusion program for teens and adults with autism and intellectual or developmental disabilities that hosted this investigation. No other inclusion criteria were required. Caregiver participants were recruited by the director of the non-profit organization where they worked. The director informed employees of the agency about the study and connected any employee who expressed interest in the study with the researcher. The researcher then determined eligibility and completed the informed consent process. Caregiver participants were excluded if they had advanced training in applied behavior analysis (i.e., certification as a behavior analyst).

Three caregiver participants were included in this study. Bea was a 26-year-old Hispanic woman with a bachelor's degree. Bea had been working at the community center as an intern and then staff member for 16 months. She had also held the Registered Behavior Technician (RBT) credential for nine months. Ellie was a 22-year-old white woman with a bachelor's degree and had worked at the community center for one year. She also had held the Registered Behavior Technician (RBT) credential for one year. Mike was a 32-year-old man with a bachelor's degree and had been working at the community center as an intern and then staff member for 11 months. Bea and Mike completed all study activities: the pre-intervention survey, baseline and BST for all three

skill sets, maintenance for three functional living skills with the PRS, and the post-intervention surveys. Ellie resigned from her position at the community-based learning center before Marcus, the PRS she was paired with, could complete intervention for all three functional living skills. Therefore, Ellie completed the pre-intervention survey, baseline and behavior skill straining for all three skill sets and completed the post-intervention surveys. Self-reported caregiver participant demographics can be found in Table 1.

Table 1

Caregiver Participant Demographics

Name	Age	Gender	Race	Ethnicity	Languages spoken	Highest degree obtained	RBT credential
Bea	26	Female	Asian, African American	Hispanic	English	Bachelor's degree	Yes
Ellie	22	Female	White	American	English	Bachelor's degree	Yes
Mike	32	Male	Declined	Slovenian, Irish	English, Spanish	Bachelor's degree	No

Note. Mike declined to report his race. RBT is the abbreviation for Registered Behavior Technician.

Persons receiving services (PRS) were eligible to be included in the study if the individual was an adult between the ages of 21-64 with an intellectual or developmental disability and had limited self-care, leisure, and activities of daily living skills. PRS who were blind, deaf, or did not have a formal expressive communication repertoire were eligible to be included in this study. PRS were excluded from the study if they or their parent/guardian did not consent, demonstrated fluctuating capacity, or did not speak

English. The PRS were also eligible to be included in the study if they were present at the community-based learning center (i.e., the setting of this study) during the same hours as the caregiver participants. The manager of the community-based learning center organized the caregiver participant and PRS' schedules to allow the PRS and caregiver participants to be available and paired together during baseline, teaching, and maintenance sessions.

Three PRS participated in this study. Demographics were self-reported by Bennett; demographics for Marcus and Simon were reported by their caregivers. PRS demographics can be found in Table 2. All three participants were ambulatory, communicated vocally, could read basic sight words, match numbers, and followed at least one-step instructions. Bennett was a white, 24-year-old male with autism who could type. Marcus was a white, 25-year-old male with autism. Simon was a Black, 24-year-old man with Down syndrome and autism. Simon used visual supports with icons to follow directions and a daily schedule. Demographic information for PRS was obtained from the PRS or their guardian. Bennett and Simon completed all study activities: baseline, teaching/intervention, and maintenance for three functional living skills and the post-intervention survey. Ellie, the caregiver participant paired with Marcus, resigned from her position at the community-based learning center before Marcus could complete intervention for all three functional living skills. Therefore, Marcus completed baseline for three functional living skills and post-intervention surveys.

Table 2

Participant Receiving Services Demographics

Name	Age	Gender	Race	Ethnicity	Languages spoken in home	Diagnosis
Bennett	24	Male	White	White, French	Spanish, English, French	Autism
Marcus	25	Male	White	White	English	Autism
Simon	21	Male	Black, African American	Eritrean	English, Tigrinya	Down Syndrome, Autism

The researcher obtained consent from caregivers and one of the PRS using institutional review board-approved procedures. For all PRS, the University of California, San Diego Brief Assessment of Capacity to Consent (UBACC) was used to determine if consent could be obtained. For two of the three PRS, it was determined that the PRS could not give consent; the researcher obtained consent from the PRS' parent/caregiver, and the researcher read an assent script to gain assent from the PRS. A procedure was in place that if PRS refused to engage in teaching procedures, the research team suspended the experimental procedures for that day and tried another day if the participant was willing; this procedure was not implemented for any PRS. If a participant refused to engage in the teaching procedures for three consecutive sessions, the research team would withdraw the participant from the investigation. Although these procedures for terminating sessions were in place, they were not required during this study. All participants, both the caregiver participants and PRS, were paid $13.00 an hour, just above the state minimum wage, for participating in this study.

The research team included four doctoral research assistants, one post-doctoral associate, and one faculty member in the educational psychology department at the University of Minnesota. Two of the four doctoral research assistants, the post-doctoral associate, and the faculty member, were board-certified behavior analysts. Three doctoral research assistants had master's degrees, all pursuing doctoral degrees in special education. The researcher implementing BST via telehealth was a white female 4th-year doctoral student who had been certified as a BCBA since 2011, had 12 years of experience using BST to train ABA staff and caregivers of individuals with ASD and IDD, and had three years of experience implementing telehealth procedures in both clinical and research settings.

Setting

A community-based learning center in a large city in Colorado was the site for this study. Requirements for inclusion of the site included: (a) an interest in a learning opportunity for both the staff and the individuals whom they serve, (b) service providers for adults with intellectual disabilities, and (c) informed consent (as approved by the Internal Review Board of the University of Minnesota). The researcher coached and observed all live sessions remotely via an internet connection using telehealth equipment. In some sessions (three with Bea/Bennett, two with Ellie/Marcus, two with Mike/Simon), caregiver participants uploaded videos of themselves teaching the target functional living skill to the PRS to a secure, HIPAA-compliant Box account for the researcher to access. The researcher provided feedback via email on skills observed in uploaded videos.

Materials

Using the University's secure Zoom platform, the researcher communicated with the caregiver participants via internet-based live videoconferencing over a high-speed internet connection. The researcher provided participants with a dedicated email address to communicate via email, connect to Zoom, and collect data. The researcher used a computer (13-inch MacBookPro) with an embedded camera and a virtual private network provided by the University of Minnesota to conduct sessions and for the caregiver participant to see the researcher. The researcher used an Air Pods pro headset to capture sound (i.e., the researcher talking) and for the researcher to hear the caregiver participant. The researcher recorded all sessions using the video record option on Zoom. All data, including videos, were stored on the University of Minnesota's secure encrypted Box account. Caregiver participants communicated with the researcher using the embedded video camera, speaker, and microphone on a Chromebook provided by the University of Minnesota.

The researcher used a PowerPoint presentation to teach task analysis concepts to the caregiver participants (Appendix A). The researcher used Microsoft Excel and Google sheets to create auto-graphing electronic data collection spreadsheets and provided them to caregiver participants. Caregiver participants individualized each functional living skill's auto-graphing data collection sheet (Appendix B). Materials used to complete each step of BST are listed in Appendix B.

Additional materials required to teach the targeted functional living skill were found in the skills training environment of the caregiver participant or provided by the parent/guardian of the PRS. Materials used to teach functional living skills to Bennet

included: a Sorry board game, a Wii console with a remote, a Guitar Hero Guitar remote, a TV, and a Mac desktop with the Garage Band application. Materials used to teach functional living skills for Marcus included: a personalized smoothie recipe (Appendix C), milk, frozen fruit, measuring cups, a NutriBullet mixer, a cup, a Wii console with remote, a TV, the board game Guess Who, and a list of questions to ask for the Guess Who game (Appendix C). Materials used to teach functional living skills for Simon included: a visual timer for the microwave (Appendix C), food to heat, a microwave, a plate, condiments, art supplies, a computer with a keyboard and mouse, and a white label with black text with the computer password (Appendix C).

Response Definitions and Data Collection

Response Definitions for Caregiver Participants

The primary dependent measure was the cumulative number of steps, up to 25 total (see Appendix B), implemented independently and correctly by the caregiver to teach a functional living skill. The skills broadly included selecting a skill to teach, developing a task analysis, implementing behavior-chaining procedures, collecting data on PRS performance, graphing, data-based decision-making, and problem-solving. The researcher or the caregiver recorded each session, and researchers coded caregiver behavior during the session or reviewed the session video. Responses were coded as *independent* (denoted by a + sign) if the caregiver participant completed the step without prompting from the researcher. The caregiver participant was permitted to refer to written materials at any time, and the response was recorded as independent if the response was correct. Researchers coded responses as *prompted* (denoted by the letter P) if the caregiver participant required vocal prompts (i.e., specific instruction to complete the

step(s)). Responses were scored as an *error* (denoted by a - sign) if the caregiver participant did not complete the step(s) as instructed or wholly omitted the step.

Response Definitions for Participants Receiving Services

Researchers collected and graphed data on the secondary dependent variable: completion of the functional living skill by the PRS. Completion was expressed as a percentage of functional living skill task steps the PRS independently and correctly performed. Responses were coded as *independent* if the PRS completed the step without prompting from the caregiver participant. Responses were scored as *prompted* if the caregiver participant provided the PRS with a prompt (i.e., vocal directions, gestures, or physical guidance to complete the step(s). Prompts were provided if the subsequent response in the behavior chain did not occur within 10 seconds of the previous response. Responses were scored as an *error* if the PRS did not complete the step(s) as indicated on the task analysis. Responses were required in the correct sequence unless otherwise indicated in the task analysis.

Experimental Design and Data Analysis

This study utilized a non-concurrent multiple baseline across caregiver participants design, and visual analysis was used to evaluate caregiver participant data. Data were graphed as the cumulative number of steps accurately implemented independently. For the purposes of the non-concurrent multiple baseline across caregiver participants design, data for each caregiver participant during baseline and one taught functional living skill were examined. In addition, for each caregiver participant, performance on two untaught functional living skills was assessed for response generalization. BST was introduced following a stable baseline across at least three

observations in a participant's baseline phase. The percentage of non-overlapping data (PND; Scruggs & Mastropieri, 2001) was computed by dividing the total number of data points during the intervention phase by the number of data points above the highest baseline data point and multiplying the quotient by 100.

Interobserver Agreement

All sessions were video recorded by the researcher or caregiver participant to allow for the collection of inter-observer agreement (IOA). Research assistants who were approved as study team members by the institutional review board and trained in direct observation data collection procedures specific to this project collected IOA data. Data collection training concluded when the research assistant and the researcher demonstrated an average agreement of at least 80% on at least three practice sessions. After completing data collection training, research assistants collected IOA occurrence agreement data (Gast & Ledford, 2018) for 34.2% of all sessions and phases (baseline, intervention, maintenance, and generalization) for all three caregiver participants. The occurrence of the agreement was calculated by dividing the number of steps with agreement by the total number of steps and multiplying by 100. The average IOA across all sessions was 98% (r = 98-100%) for Bea, 91% (r = 86-100%) for Bennett, 98% (r = 92-100%) for Ellie, 92% (r = 83-100%) for Marcus, 95% (r = 85-100%) for Mike, and 94% (r = 83-100%) for Simon.

Procedural Fidelity

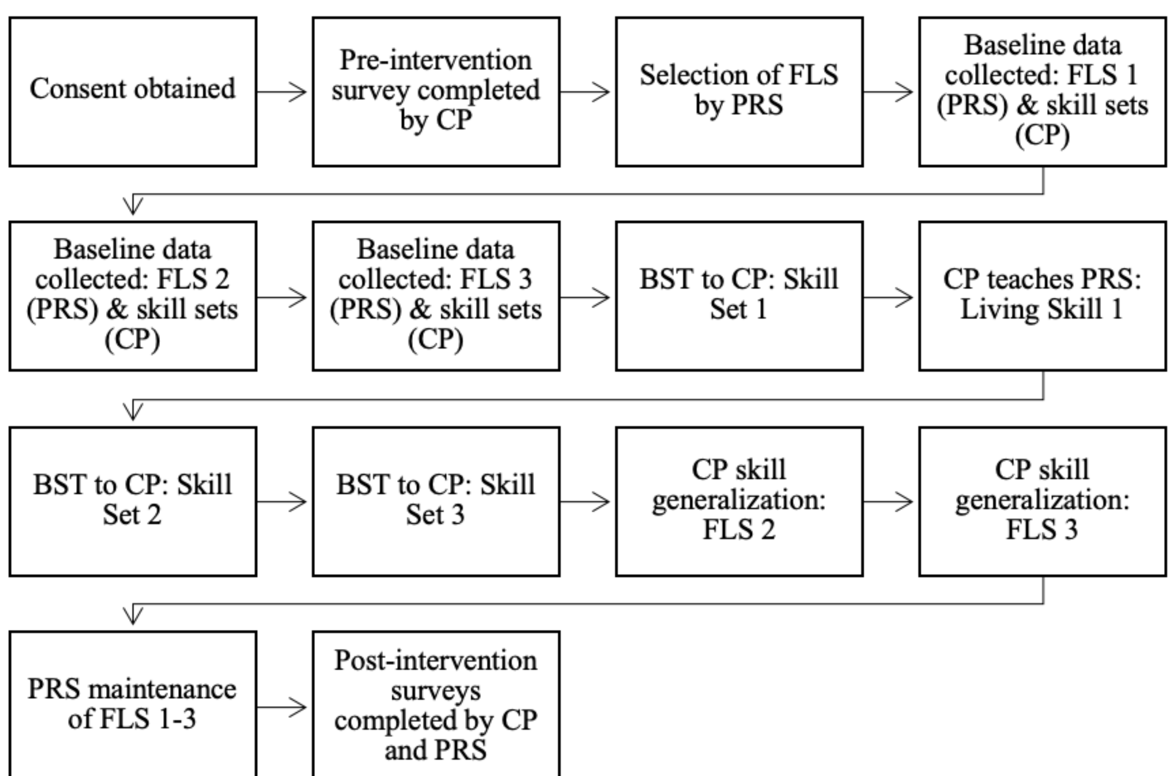
Researchers coded procedural fidelity for 34.4% of baseline, intervention, maintenance, and generalization sessions for the researcher's implementation of BST across the three caregiver participants. Across sessions, procedural fidelity averaged

99.9% (*r* = 99.87-100%). The procedural fidelity steps consisted of the following: (1) provide rationale for the use of developing a task analysis, behavior chaining, data collection, graphing data, and decision making; (2) vocally describe the steps of how to develop a task analysis, behavior chaining, data collection, graphing data, and decision making; (3) provide caregiver participant with written summary of the target skills; (4) demonstrate via model how to develop a task analysis, behavior chaining, data collection, graphing data, and decision making; (5) observe the caregiver participant to practice developing a task analysis, behavior chaining, data collection, graphing data, and decision making in the natural environment (generalization tactic: *program common stimuli)*; (6) observe and record performance of developing a task analysis, behavior chaining, data collection on PRS performance, graphing PRS data, and data based-decision making of PRS performance (generalization tactic: *introduce to natural maintaining contingencies*); (7) provide performance feedback on accurately performed steps and provide corrective feedback on steps not meeting criteria; and (8) repeating steps 6 and 7 until the caregiver participant has reached mastery (80% of steps correct across three trials) across one taught FLS and two untaught FLS (generalization tactic: *train sufficient exemplars*).

Procedure

Figure 1

Sequence of Study Activities



Note. PRS = participant receiving services; CP = caregiver participant; BST = Behavior Skills Training. Functional living skill (FLS) 1 teaching may have occurred concurrently with functional living skills 2 and 3.

This study followed the sequence of activities outlined in Figure 1. This study occurred over 18 weeks. The average number of weeks from the first baseline session to the final maintenance session for each caregiver participant and PRS pairing was 17.7 weeks (*r* = 7.9-17.7). The average number of days from the first baseline session to the last baseline session was 9 days (*r* = 6-14). The average number of weeks from the first intervention session to the last intervention session was 9.76 weeks (*r* = 3.3-15.0), and the average number of weeks from the first maintenance session to the last maintenance session was 2.6 weeks (*r* = 2.0-3.3).

Pre-Intervention Participant Surveys

The researcher administered self-determination surveys (Appendix F) to caregiver participants twice: the first time prior to the first intervention session and the second time either following the last maintenance session or before the caregiver participant completed the study.

Selection of the Functional Living Skills

Following the informed consent process and administration of pre-intervention self- determination surveys, each PRS participated in the selection of the three functional living skills that they chose to learn. During an initial interview with the PRSs, researchers vocally coached the caregiver participant through an interview with the PRS using open-ended questions and rank-ordering to determine what skills the PRS wanted to learn and in which order. Bennett identified three things he wanted to learn when asked, “What is something new you want to learn?” Bea, the caregiver participant working with Bennett, reminded Bennett of the board games, computer games, and Wii console games available at the community center. He chose to learn how to play the

board game Sorry, play Guitar Hero on the Wii gaming console, and record music using the Guitar Hero application on a Mac desktop.

Marcus responded, “I do not know,” when asked, "what is something new you want to learn?” Elle, the caregiver participant working with Marcus, provided Marcus with board games, computer games, and Wii console games available at the community center. Elle also gave Marcus some options of recipes he could learn, including making a smoothie which was something that Marcus chose to buy when in the community. He chose to learn to make a smoothie, play Wii Sports on the Wii console, and play the board game Guess Who. After an open-ended interview with Simon about the activities he liked at the community center, he said he likes to listen to music, complete puzzles, create art, and play computer games. Mike, the caregiver participant working with Simon, identified that Simon liked to do art but required support from staff to set up an art project. Simon agreed that he would like to learn how to independently set up an art project. Mike also identified that Simon was independent with most lunchtime routines but could not use the microwave independently and had to ask others for help. When asked, “Would you like to heat your food in the microwave?” Simon agreed that he would like to learn how to use the microwave. Lastly, although Simon liked to play computer games, Mike stated that Simon could not log into the computer independently and asked others for help entering the password. When asked, “Would you like to learn how to log into the computer?” Simon agreed that he would like to learn this skill. All PRS chose the order in which they wanted to learn the skills. The researcher then used BST to train the caregiver participant to teach the first functional living skill and then

evaluated the caregiver participants’ performance on the remaining two untaught skills to document the degree to which they generalized skill instruction across skills.

Functional Living Skills

Bennett chose to learn the following three functional living skills: playing the board game Sorry, starting the game Guitar Hero on the Wii console, and starting the game Guitar Hero on a Mac desktop. The task analysis steps for Bennett’s functional living skills, written by Bea, can be found in Appendix D.

Marcus chose to learn the following three functional living skills: making a smoothie, playing Wii Sports, and playing the board game Guess Who. The task analysis steps, written by Ellie, for Marcus's functional living skills can be found in Appendix D.

Simon chose to learn the following three functional living skills: heating food using a microwave, logging into the computer, and setting up an art project. The task analysis steps for Simon’s functional living skills, written by Mike, can be found in Appendix D.

Baseline

The researcher collected baseline data on the caregiver providing skill instruction for three FLSs with a PRS. During baseline, the researcher asked the caregiver to teach each functional living skill once to the PRS. The researcher did not provide additional prompting or coaching; no instructions were provided other than to position the camera such that the PRS and caregiver participants were both within view of the camera and to teach the functional living skill. The researcher collected data on the caregiver participant performance of the 25 steps, including creating a task analysis, behavior chaining, data collection and graphing, and data-based decision-making. In order to establish the need

for the PRS to learn the functional living skill, the researcher collected baseline performance data for one baseline session of each functional living skill with each PRS. The researcher recorded and later scored the percentage of functional living skill steps the PRS completed independently during baseline sessions. The baseline phase for the caregiver participant concluded following a minimum of three sessions (one for each functional living skill) with stable data (data that were not demonstrating an ascending or descending trend).

Behavior Skills Training

The researcher conducted three types of training sessions with each caregiver participant in the following order: (1) initial training sessions in which the researcher and caregiver participant met to review the skill set, (2) live or recorded teaching sessions where the caregiver participant directed the PRS to complete the functional living skill, and (3) follow-up sessions in which the researcher met with the caregiver participant to provide feedback, review the written materials, and provide additional practice opportunities.

The researcher used BST procedures (Parsons et al., 2012) to teach caregiver participants the 25 steps divided into three skill sets related to target functional living skills: (1) developing a task analysis, (2) behavior chaining, data collection, and graphing, and (3) data-based decision making and problem-solving. The researcher began by providing the caregiver participants with a copy of the PowerPoint presentation to reference during the training and sessions. Training sessions were conducted synchronously and individually with each caregiver via Zoom. Training sessions ranged from 30 to 75 minutes. During the training with the PowerPoint presentation, the

researcher provided a rationale for, and description of each skill set step. Skills that required physical interaction with the PRS (specifically skills: 4, 15, 16) were described vocally during BST sessions, written descriptions of skills were provided in the training PowerPoint, and skills were practiced during teaching sessions where the caregiver participant directed the PRS to complete the functional living skill.

During the initial training sessions, the researcher taught the steps related to the PRS' first functional living skill task analysis in sequential order. During initial training of skill set 1, the researcher used the PowerPoint presentation to teach skill set 1 with the caregiver participants without the PRS present (task analysis and behavior chaining; see Table 3). The researcher reminded the caregiver participant to refer to the PowerPoint slide deck as needed. Following the delivery of instruction using the PowerPoint slide deck, the researcher instructed the caregiver participant to follow steps 1-13 (i.e., skills related to creating a task analysis and determining behavior chaining procedures), and the researcher scored the caregiver on their performance on each step as either independent or error and provided performance feedback. During all initial training sessions, the researcher provided immediate feedback on each step and if needed, provided additional training by referencing the relevant PowerPoint presentation.

Table 3

Skill Set 1: Task Analysis and Behavior Chaining

Step Number	Step Description
1.	Break down the skill into individualized, measurable steps.
2.	Execute the task analysis steps independently (self-role play)
3.	Edit the task analysis based on step 2 - as needed.
4.	Complete the task analysis confirm that: a. The task analysis steps are in the correct order b. The task analysis is complete (i.e., there are no missing steps)
5.	Edit the task analysis based on step 4.
6.	Determine an appropriate behavior chaining procedure.
7.	Reinforcement is identified that is appropriate for the PRS
8.	Enter each step in its own cell starting at cell C:2 on the tab "ROUTINE NAME_Data"
9.	Add additional rows by right clicking on a letter between C and S and selecting "insert"
10.	Highlight the target teaching steps
11.	Update the tab "ROUTINE NAME_Data"
12.	Update the tab "ROUTINE NAME_Graph"
13.	Rename the graph "ROUTINE NAME graph"

The researcher trained the caregiver on skill set 2 (data collection and graphing; see Table 4) immediately before the first teaching session in which the caregiver participant taught the PRS the first functional living skill with the PRS. Skill set 2 training consisted of the following: (1) the researcher provided instruction using the

PowerPoint presentation for skill set 2 14-17 with the caregiver participant without the PRS present, (2) the researcher instructed the caregiver participant to invite the PRS to join the session and gather any necessary materials, (3) the researcher instructed the caregiver participant to complete Skill Set 2: Data Collection and Graphing steps 14-20 while teaching the functional living skill to the PRS, (4) the researcher vocally coached the caregiver participant while they were teaching the functional living skill to the PRS, and (5) the researcher scored the caregiver on their performance on each step as either independent, prompted, or error.

While the caregiver participant taught the PRS, the researcher provided performance feedback to the caregiver participant, either in the moment or immediately after the session. The researcher retrained skill sets to the caregiver if the caregiver participant requested a reminder on the procedures or if the caregiver participant made more than two errors in a row in the skill by reviewing the related slides of the PowerPoint presentations and modeling the skill for skills using the computer (e.g., the researcher provided a model of making edits to the teaching steps on the datasheet or on the graph) or providing a detailed description for skills related to direct teaching (e.g., prompting procedures) or until the caregiver participant performed the skill independently and correctly (i.e., without prompting from the researcher). The caregiver participant repeated instruction with performance feedback from the researcher until the PRS reached mastery (80% of steps correct across three trials).

Table 4

Skill Set 2: Data Collection and Graphing

Step Number	Step Description
14.	Correct chaining procedure was used.
15.	All non-target teaching steps are prompted using least-to-most prompting
16.	All target teaching steps are prompted only as needed to avoid an error
17.	Reinforcement is provided following the target/taught steps
18.	Data entered into data sheet correctly for all steps using the following codes as either + (independent), - (error), P (prompted), and n/a (step not applicable for that session)
19.	Correct percent is calculated for independent steps
20.	Graph includes all collected data

The researcher taught skill set 3 (steps 21-25; data-based decision making; see Table 8) following the third intervention session of the first functional living skill with the PRS. Caregiver participants followed the same procedures described above for reviewing the PowerPoint presentation before implementing instruction with the PRS. The caregiver participant implemented steps 21-25 (Table 5) while the researcher observed, recorded their performance, and provided performance feedback. The researcher provided performance feedback as described above.

Table 5

Skill Set 3: Data-Based Decision-Making & Problem-Solving

Step Number	Step Description
21.	Mastering steps: Caregiver moves the PRS onto the next target step following 3 consecutive independent responses across 3 separate sessions
22.	Selecting next target: Correct target is selected based on chaining type: a. Backward chain: The previous set is selected as a teaching target b. Forward chain: the following step is selected as teaching target c. Total task: A previously prompted step is selected as a teaching target
23.	If a target teaching step is still requiring prompts after 3 consecutive sessions, prompting level is increased
24.	If caregiver(s) are performing steps of the chain, reevaluate the completeness of the task chain and add additional steps as needed
25.	If the participant receiving services demonstrates reduced motivation to complete the task, the caregiver decides to: a. Shorten the task (i.e., a fewer number of total steps are taught). b. Add additional extrinsic reinforcement to the chain

Generalization

Following the introduction of the steps in skill sets 1, 2, and 3 with functional living skill 1, the researcher instructed the caregiver participant to repeat the entire skill instruction process with two novel, untaught functional living skills (i.e., functional living skills 2 and 3) with the same participant. First, researchers instructed the caregiver participant to teach the next functional living skill so they could measure generalization to instruction of the first novel skill (Functional Living Skill 2). The researcher reminded the caregiver participant that they could refer to the PowerPoint presentation materials.

The researcher did not provide additional training and only provided feedback on errors as described above until the caregiver participants demonstrated mastery of the trained teaching skills. Next, to measure generalization to the second novel skill (Functional Living Skill 3), researchers instructed the caregiver participant to teach the third functional living skill. However, the researcher did not remind the caregiver participant to refer to the PowerPoint presentations provided. The researcher provided performance feedback following each generalization (functional living skill 3 instruction) session. Multiple observations were conducted for both novel functional living skills; the number of observations depended on the caregiver and PRS performance.

Maintenance of Functional Living Skills

The researcher collected maintenance data on each functional living skill the PRS performed at least one week following the last intervention session. During maintenance sessions, the researcher directed the PRS to complete each functional living skill without additional prompting or coaching from the researcher or the caregiver participant.

Post-Intervention Participant Surveys

Immediately following the final maintenance session, caregiver participants completed three surveys regarding treatment acceptability (Appendix E; Weiner et al., 2017): Acceptability of Intervention Measure (AIM), Intervention Appropriateness Measure (IAM; Weiner et al., 2017), and Feasibility of Intervention Measure (FIM; Weiner et al., 2017). Each survey consisted of four questions with a 1-5 scale: (1) completely disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, and (5) completely agree.

PRS completed a treatment acceptability rating scale that was modified based on the AIM (Appendix F) following the final maintenance session regarding treatment acceptability. PRS respondents were asked to respond to each question with a rating of 1-5: (1) No – I didn't like it at all, (2) No – I didn't like it, (3) Neutral – I'm not sure, (4) Yes – I liked it, and (5) Yes – I really liked it. Visuals reflecting a related emotion were paired with each rating presented to all PRS. A staff member from the community center read each of the questions and the ratings to the PRS. Bennet and Marcus independently circled their rating for each question. The staff member working with Simon circled the response that he pointed to.

Chapter 4

RESULTS

Caregiver Participants

Behavior Skills Training to Teach Skill Sets 1, 2, and 3

The results for the three caregiver participants are represented in Figure 2. During baseline sessions, all three caregiver participants performed 0% of skills independently across all three baseline sessions. The introduction of each skill set is labeled at the corresponding session on the graph for each participant. The percentage of non-overlapping data (PND) was calculated for all caregiver participants. PND was calculated by dividing the total number of data points above the highest baseline data point during the intervention phase by the total number of data points in the intervention phase and multiplying the quotient by 100.

Bea. Following initial training, Bea demonstrated skill steps independently in Skill Set 1 during the first teaching session. When the researcher continued training for Skill Set 1 and introduced intervention for Skill Set 2 in the second session, Bea completed three skill steps independently in Skill Set 2. Bea completed eight skill steps independently in the fourth session when the researcher continued intervention for Skill Sets 1 and 2 and introduced training for Skill Set 3. By the 20th intervention session, Bea independently executed all skill set steps. PND for Bea's baseline and intervention sessions was 96.2% (25/26).

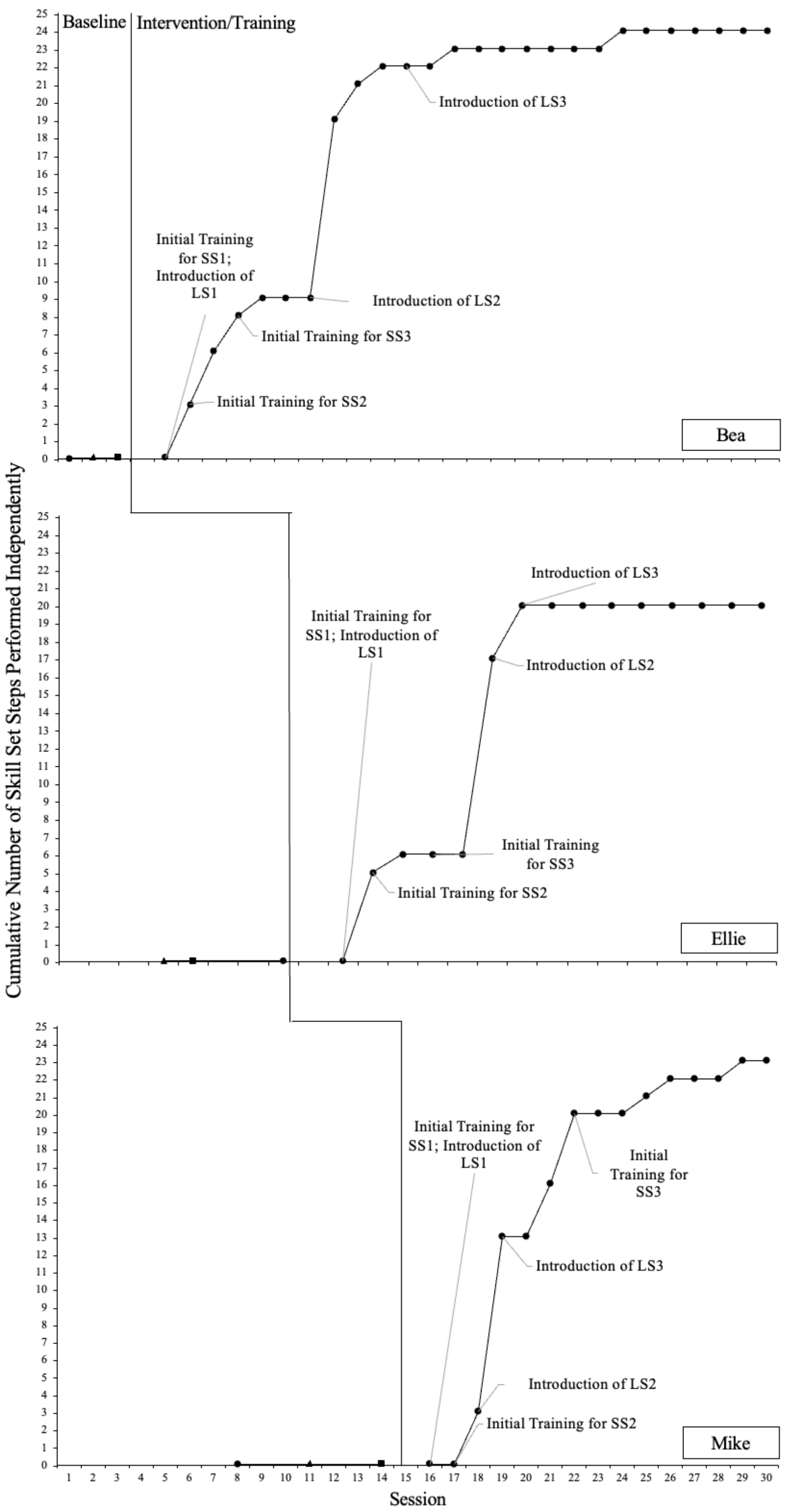
Ellie. Following initial training, Ellie demonstrated skill steps independently in Skill Set 1 during the first teaching session. When the researcher continued training for Skill Set 1 and introduced training for Skill Set 2 in the second session, Ellie completed

five skill steps independently in Skill Set 2. Ellie completed six skill steps independently in the fourth session when the researcher continued training for Skill Sets 1 and 2 and introduced training for Skill Set 3. By the seventh session, Ellie demonstrated 21 of the 25 skill set steps (Ellie did not have an opportunity to demonstrate skill set steps 21, 23, 24, and 25 because the corresponding problem-solving situations did not arise during the study, and Marcus did not complete instruction for all living skills, which limited opportunities for problem-solving situations to arise). PND for Ellie's baseline and intervention sessions was 93.3% (14/15).

Mike. Following initial training, Mike did not demonstrate any skill steps independently in Skill Set 1 during the first training session. When the researcher continued training for Skill Set 1 and introduced intervention for Skill Set 2 in the second session, Mike completed zero skill steps independently. Mike completed 20 skill steps independently in the fourth session when the researcher continued training for Skill Sets 1 and 2 and introduced training for Skill Set 3. By the 14th intervention session, Mike demonstrated 23 of the 25 skill set steps. Mike was not able to demonstrate skill set steps 24 and 25 because the corresponding problem-solving situations did not arise during the study. PND for Mike's baseline and intervention sessions is 86.7% (13/15).

Figure 2

Cumulative Number of Skill Set Steps Performed by Caregiver Participant



Note. SS stands for skill set. LS stands for living skill. Each baseline data point represents a functional living skill 1, 2, or 3 and is represented by the same shapes in Figure 5.

Generalization

The skill generalization results for the three caregiver participants are represented in Figure 3. Recall that during baseline, all caregiver participants performed zero skill steps accurately for all three functional living skills; baseline data are not depicted in the generalization bar graph. The bars marked as baseline indicate the caregiver participant's first opportunity to apply Skill Sets 1, 2, and 3 to the first living skill with the PRS following the corresponding Skill Set lectures. Generalization data were collected on the first opportunity to implement each skill set across the two novel functional living skills. Presenting the data for the first opportunity to implement the skill set allows demonstration of caregiver performance without feedback.

Bea. Bea taught Living Skill 1 while receiving BST, and she demonstrated 0% of Skill Set 1 steps, 43% of Skill Set 2 steps, and 40% of Skill Set 3 steps on the first opportunity. Bea did not receive training to implement Living Skills 2 and 3; generalization data were collected for those two living skills. For living skill 2, Bea independently completed 85% of Skill Set 1 steps, 100% of Skill Set 2 steps, and 60% of Skill Set 3 steps on the first opportunity. For living skill 3, Bea independently completed 92% of Skill Set 1 steps, 100% of Skill Set 2 steps, and 100% of Skill Set 3 steps on the first opportunity.

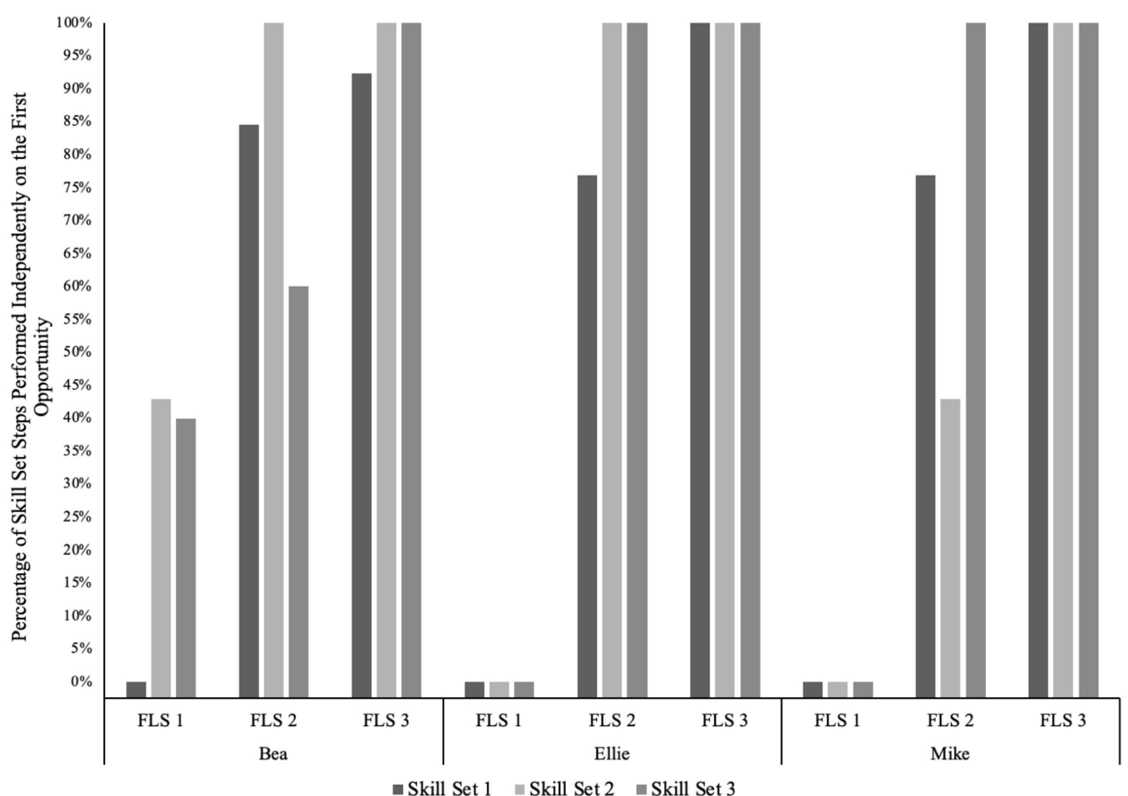
Ellie. Ellie taught Living Skill 1 while receiving the intervention, and she demonstrated 0% of Skill Set 1 steps, 0% of Skill Set 2 steps, and 0% of Skill Set 3 steps on the first opportunity. Ellie did not receive intervention for teaching Living Skills 2 and

3; generalization data were collected for those two living skills. For living skill 2, Ellie independently completed 77% of Skill Set 1 steps, 100% of Skill Set 2 steps, and 100% of Skill Set 3 steps on the first opportunity. For living skill 3, Ellie independently completed 92% of Skill Set 1 steps, 100% of Skill Set 2 steps, and 100% of Skill Set 3 steps on the first opportunity.

Mike. Mike taught Living Skill 1 while receiving the intervention, and he demonstrated 0% of Skill Set 1 steps, 0% of Skill Set 2 steps, and 0% of Skill Set 3 steps on the first opportunity. Mike did not receive intervention for teaching Living Skills 2 and 3; generalization data were collected for those two living skills. For living skill 2, Mike independently completed 7% of Skill Set 1 steps, 43% of Skill Set 2 steps, and 100% of Skill Set 3 steps on the first opportunity. For living skill 3, Mike independently completed 100% of Skill Set 1 steps, 100% of Skill Set 2 steps, and 100% of Skill Set 3 steps on the first opportunity.

Figure 3

Caregiver Performance During Training (Living Skill 1) and Generalization (Living Skills 2 and 3)



Note. FLS = Functional Living Skill.

Self-Determination Survey

Caregiver participant scores on the self-determination survey conducted pre- and post-intervention are reported in Table 6. The staff knowledge and staff roles sections of the self-determination survey were not included in the results as the content was unrelated to the current study. Mike did not complete the caregiver participant survey's job orientation or staff training sections. The researcher coded the remaining sections as either 1, 2, 3, or 4, with 1 representing the lower rating (e.g., poor, never, not at all) and 4

representing the higher rating (e.g., excellent, frequently, very well). A survey item marked as n/a was coded as 0.

Bea did not increase nor decrease her rating by more than two points in any category from pre- to post-intervention. Ellie increased her rating by 5 points in the staff training category from pre- to post-intervention and increased her rating by 3 points from pre- to post-intervention in the staff supervision, staff behaviors, and staff skills categories. Mike increased his rating by 3 points in the staff attitudes and beliefs category from pre- to post-intervention.

Table 6

Caregiver Participant Scores on the Self-Determination Survey Pre and Post Intervention

Category	Number of items in category	Highest possible score	Bea		Ellie		Mike	
			Pre	Post	Pre	Post	Pre	Post
Job Orientation	3	12	11	12	7	9	N/A	N/A
Application of Skills	6	24	22	21	23	21	23	24
Staff Training	6	24	20	22	13	18	N/A	N/A
Staff Supervision	3	12	12	12	7	10	10	10
Staff Behaviors	20	80	54	54	49	52	56	58
Staff Skills	20	80	67	65	55	58	70	69
Staff Attitudes and Beliefs	18	72	52	51	37	37	49	52

Note. Categories without both pre- and post-intervention scores are scored as N/A.

Intervention Usability Survey

After they completed the study, caregiver participants were asked to rate intervention usability on 12 items on a scale of 1-5 (1-completely disagree, 2-disagree, 3-neither agree nor disagree, 4-agree, 5-completely agree). The survey was divided into three categories: acceptability of intervention (Table 7), intervention appropriateness (Table 8), and feasibility of intervention (Table 9). Caregiver participants rated all 12 items as either 4-agree or 5-completely agree.

Table 7

Acceptability of Intervention

Item	Bea	Ellie	Mike
1. Learning how to implement a task analysis via behavior skills training meets my approval.	5-Completely agree	5-Completely agree	5-Completely agree
2. Learning how to implement a task analysis via behavior skills training is appealing to me.	5-Completely agree	5-Completely agree	5-Completely agree
3. I like learning via behavior skills training	5-Completely agree	4-Agree	5-Completely agree
4. I welcome learning via behavior skills training	5-Completely agree	4-Agree	5-Completely agree

Table 8

Intervention Appropriateness

Item	Ellie	Ellie	Mike
1. Learning how to implement a task analysis via behavior skills training and telehealth seems fitting.	5-Completely agree	4-Agree	4-Agree
2. Learning via behavior skills training seems suitable.	5-Completely agree	4-Agree	5-Completely agree
3. Learning how to implement a task analysis via behavior skills training seems applicable.	5-Completely agree	4-Agree	5-Completely agree
4. Learning how to implement a task analysis via behavior skills training seems like a good match.	5-Completely agree	4-Agree	5-Completely agree

Table 9

Feasibility of Intervention

Item	Ellie	Ellie	Mike
1. Learning how to implement a task analysis via behavior skills training seems implementable.	5-Completely agree	4-Agree	5-Completely agree
2. Learning how to implement a task analysis via behavior skills training seems possible.	5-Completely agree	4-Agree	5-Completely agree
3. Learning how to implement a task analysis via behavior skills training seems doable.	5-Completely agree	4-Agree	5-Completely agree
4. Learning how to implement a task analysis via behavior skills training seems like a good match.	5-Completely agree	4-Agree	5-Completely agree

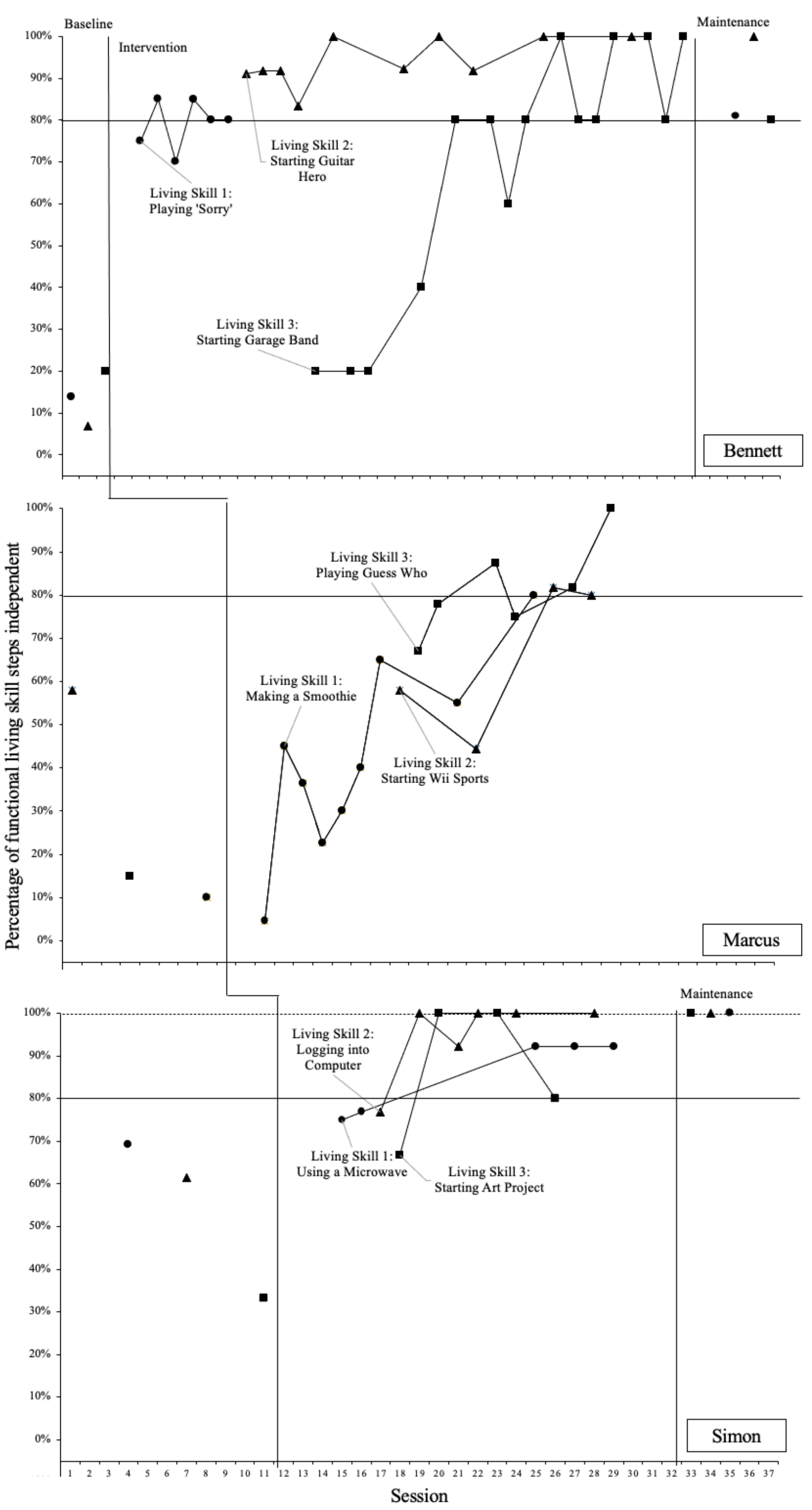
Participants Receiving Services

The functional living skills performance for the three participants receiving services are represented in Figure 4. One baseline data point was collected for each living skill. During teaching, PRS data were collected during all sessions with the caregiver participant, PRS, and researcher. For Bennett and Simon, living skill 2 was introduced following at least three sessions of living skill 1 in which data demonstrated an ascending trend, and living skill 3 was introduced following at least three sessions of living skill 2 in which data demonstrated an ascending trend. For Simon, living skill 2 was introduced after only two sessions of living skill 1 that were near mastery criterion (i.e., 75% and 77%). Living skill 3 was introduced following only one session of living skill two at 77%, which was also near the mastery criterion for that skill. One data point for each living skill was collected at least one week following the last intervention session for the corresponding living skill to assess maintenance. PND was calculated for Bennett and

Simon because they both completed intervention phases, and Marcus did not complete intervention sessions for all living skills; therefore, PND was not calculated.

Figure 4

Performance of Functional Living Skills for Participants Receiving Services



Note. The horizontal lines on each panel indicate the mastery criterion for each participant. Mastery criterion was set at 80% (represented by the solid, horizontal line) for all functional living skills, except for Simon's Living Skill 2: Logging into a computer, which was set at 100% (represented by the dashed, horizontal line).

Bennett

Living Skill 1: Playing the Board Game Sorry. During baseline for living skill 1, Bennett performed 14% (3/21) of steps independently. Bennett reached mastery criterion (80% of steps across three sessions) for living skill 1 by the sixth teaching session. Bennett maintained living skill 1 at 81% of all steps performed independently, and PND for living skill 1 was 100% (6/6).

Living Skill 2: Starting the Wii Game Guitar Hero. During baseline for living skill 2, Bennett performed 8% (1/13) of steps independently. Bennett reached mastery criterion of living skill 2 (80% of steps across three sessions) by the third teaching session. Bennett stated to the researcher that he wanted to learn to start this game independently and without help from others. Therefore, teaching continued until Bennett reached his self-determined goal of 100% for two consecutive sessions. Bennett maintained living skill 3 at 100% of all steps performed independently. PND for living skill 2 was 100% (10/10).

Living Skill 3: Starting the Computer Game Garage Band. During baseline for living skill 3, Bennett performed 20% (1/5) of steps independently. Bennett reached mastery criterion (80% of steps across three sessions) for living skill 2 by the tenth teaching session. Bennett stated to the research that he wanted to learn to start this computer program independently and without help from others. Therefore, teaching

continued until Bennett reached his self-determined goal of 100% for two consecutive sessions. Following eight teaching sessions with living skill steps completed between 80-100%, Bennett stated that he did not want to continue teaching sessions and was happy with his progress. Bennett maintained living skill 3 at 80% of all steps performed independently. PND for living skill 3 was 80% (12/15).

Marcus

Living Skill 1: Making a Smoothie. During baseline for living skill 1, Marcus performed 10% (2/20) of steps independently. Marcus performed 80% of steps independently by the ninth teaching session before sessions were terminated when Ellie (the caregiver participant working with Marcus) withdrew from the study because she left the company to pursue graduate school. Maintenance data were not collected for Marcus's living skill 1.

Living Skill 2: Starting the Wii Game Wii Sports. During baseline for living skill 2, Marcus performed 58% (7/12) of steps independently. Marcus performed 82% of steps independently on the third teaching session, and 80% on the fourth teaching session before sessions were terminated when Ellie withdrew from the study. Maintenance data were not collected for this Marcus's living skill 2.

Living Skill 3: Starting the Board Game Guess Who. During the baseline session for living skill 3, Marcus performed 15% (2/13) of steps independently. Marcus performed 82% of steps independently on the fifth teaching session, and 100% on the sixth teaching session before sessions were terminated when Ellie withdrew from the study. Maintenance data were not collected for this Marcus's living skill 3.

Simon

Living Skill 1: Using a Microwave. During baseline for living skill 1, Simon performed 69% (9/13) of steps independently. Simon reached mastery criterion (80% of steps across three sessions) for living skill 1 by the fifth teaching session. Simon maintained living skill 1 at 100% of steps performed independently, and PND for living skill 1 was 100% (5/5).

Living Skill 2: Logging Onto a Computer. During baseline for living skill 2, Simon performed 62% (8/13) of steps independently. Due to the nature of the living skill (i.e., all steps must be performed correctly in a specific order to achieve independence, such as entering a password where all steps must be in the correct order or none of the subsequent steps will be correct), mastery criterion for Simon's living skill 2 was set at 100% across three sessions. Simon reached mastery criterion of living skill 2 by the sixth teaching session. Simon maintained living skill 2 at 100% of steps performed independently. PND for living skill 2 was 100% (6/6).

Living Skill 3: Starting an Art Project. During baseline for living skill 3, Simon performed 33% (2/6) of steps independently. Simon reached mastery criterion (80% of steps across three sessions) for living skill 1 by the fourth teaching session. Simon maintained living skill 3 at 100% of steps performed independently. PND for living skill 3 was 100% (4/4).

Social Validity Survey

PRS were asked to rate six items related to the study on a scale of 1-5 (1-No, I didn't like it at all, 2-No, I didn't like it, 3-Neutral 4-Yes, I liked it, 5-Yes, I really liked it). Bennett and Simon rated either 4 or 5 on all survey items. Marcus rated either 4 or 5 or 5 to three survey items a 3 on the other three items. Marcus commented when completing the survey, which was noted by the caregiver who read the survey to Marcus, that although he enjoyed drinking the smoothie he made, he did not enjoy making the smoothie. Social validity survey items and the PRS' responses are summarized in Table 10.

Table 10

PRS Social Validity Survey

Item	Bennett	Marcus	Simon
1. I liked picking what I learned.	4-Yes, I liked it	4-Yes, I liked it	4-Yes, I liked it
2. I liked learning living skill 1.	*Playing Sorry* 4-Yes, I liked it	*Guess Who* 5-Yes, I really liked it	*Heating up lunch* 5-Yes, I really liked it
3. I liked learning living skill 2.	*Garage Band* 4-Yes, I liked it	*Wii Sports* 3-Neutral	*Logging into the computer* 4-Yes, I liked it
4. I liked learning living skill 3.	*Guitar Hero* 4-Yes, I liked it	*Making a smoothie* 3-Neutral	*Art projects* 5-Yes, I really liked it
5. I liked working with the researcher on the computer.	4-Yes, I liked it	3-Neutral	4-Yes, I liked it
6. I want to pick my own goals in the future.	5-Yes, I really liked it	5-Yes, I really liked it	5-Yes, I really liked it

Chapter 5

DISCUSSION

PRS depend on trained caregivers to teach them skills required for community participation and to exercise agency. With paid caregiver turn-over rates nearly 50%, training procedures that are efficient and effective and that produce generalizable skills are needed (Pettingell et al., 2022). The results of this study demonstrate that BST delivered via telehealth can result in the acquisition and generalization of teaching procedures performed by paid caregivers. Further, the teaching procedures resulted in PRS gaining skills in functional living skills that they identified they wanted to learn.

The results of this study demonstrate that all three caregiver participants generalized the skills they learned with one functional living skill to two novel functional living skills that the PRS selected. During baseline, Bea, Ellie, and Mike did not independently demonstrate any skill set steps. All three caregiver participants met mastery criteria for all three skill sets. Additionally, all caregiver participants generalized the skills in all three skill sets that they could perform while teaching the two novel functional living skills. Notably, generalization was less than perfect with the first novel skill but with the second novel skill, two caregiver participants (Ellie and Mike) generalized all three skill sets perfectly and the third participant (Bea) generalized two of three skill sets (skill sets 2 and 3) perfectly. The study results suggest telehealth is an effective service delivery model for facilitating caregiver skill acquisition and generalization of skills required to teach adults with IDD functional living skills.

The caregiver training process included systematic and proactive response generalization tactics for training caregivers to teach various functional living skills. This

study utilized several response generalization tactics. Lastly, this study was implemented in the caregiver participants' training and working environment and the PRS' learning environment, which exposed the caregiver participant to the natural contingencies of reinforcement. By allowing the researcher to access naturally maintaining consequences in the training process, such as personal job skill development, feedback from peers and supervisors, and supporting the individuals they serve to learn new skills and increase their independence and autonomy. Programming common stimuli was demonstrated via training the caregiver participant in the context of the setting where they implemented teaching with the PRS, using the task materials from the natural setting. Study procedures utilized the generalization strategy of training sufficient exemplars as the caregiver participants could apply the skill sets to multiple functional living skills. The arrangement of a diverse training environment may have supported the caregiver participants' performance when they encountered variations of stimuli in the natural environment. The generalization strategies were built into the training process, and as a result, the caregiver participants generalized their teaching skills to two untaught functional living skills. Mediating generalization was demonstrated through didactic instruction with written descriptions of procedures, examples, procedures, and visual support presented in a PowerPoint that the researcher provided to the caregiver and that they could keep and reference at any point during the study.

Further, telehealth was an effective service delivery model to teach the PRS in a natural environment, where they spend their day learning and socializing with others. The telehealth modality allowed the PRS to learn functional living skills to increase their independence and autonomy. All three PRS learned part, if not all, of three new skills that

they identified they wanted to learn, and they reported that they enjoyed selecting their own goals.

None of the three caregiver participants reduced pre- to post-intervention self-determination study scores by more than one point in any category. However, Ellie and Mike increased their ratings in several categories from pre- to post-intervention. Survey categories with increases of 3 or 5 points included staff supervision, staff behaviors, staff skills, and staff attitudes and beliefs categories. The pre- to post-intervention self-determination study scores suggest that caregiver training, utilizing response generalization tactics, may increase caregiver self-determination.

Limitations

There were several limitations to this study. High turnover among paid caregivers, such as direct support professionals, is a constant and pervasive challenge in human service positions (Pettingell et al., 2022). This study was not immune from the effects of turnover. Ellie terminated her participation in the study before Marcus could achieve mastery in any of his functional living skills. Ellie completed all steps of skill sets 1 and 2. However, she could not practice all the skill set 3 steps with her novel functional living skills, but she did demonstrate generalization on the skill set 3 steps that she was able to perform. Mike was also unable to practice all skills of skill set 3 because he did not encounter all scenarios to allow him to generalize because the corresponding problem-solving situations did not arise during the study. It is unclear if Ellie and Mike's results would have been as successful if they had encountered all of the steps of skill set 3 during generalization. The absence of data for skill set 3 for Ellie and Mike precludes comparison of skill set 3 skill generalization across all caregiver participants.

Additionally, the generalization of skills was tested on the first opportunity only. The data in this study do not reflect if the caregiver participant could independently perform the skill if the opportunity to implement the target skill occurred again (i.e., maintenance).

Excel, Google sheets, and PowerPoint were the data collection and training software used in this study. The community program where the PRS and caregiver participants worked or received services utilized a different data collection software that integrates data collection, graphing, and billing. Using a different data collection system raises questions about sustainability in this study; had this study implemented training procedures and materials already being used at the community site, this could promote generalization across other functional living skills for all PRS within the program. Utilizing the same technology or software helps caregivers and trainers sustain their learned skills and potentially train or support other caregivers.

Future Directions

The importance of including PRS in their programming must be considered. Simply including a PRS in programming decisions, from something as simple as what smoothie flavor they would like to make to selecting their yearly goals and outcomes, may impact their motivation to engage in the learning process and may contribute to enhanced outcomes. A future study that examines the speed of acquisition, engagement, assent, and acceptability of PRS-selected versus caregiver-selected functional living skills might be of interest.

This study utilized a 1:1 caregiver training model, which is time-consuming and potentially costly compared to group caregiver training. Pyramidal training is a potential

solution to maximize training time and resources. The pyramidal approach to staff training includes a senior trainer that trains staff to train other staff within the same organization. The pyramidal model allows for more trainers to be present at a supportive living or working organization and potentially allows for more efficient staff training. This takes some time away from more senior trainers since they can efficiently train other staff to be trainers to share the training load. The future use of pyramidal training using BST is a topic for future research. The practical application of pyramidal training using behavioral skills training allows for training multiple service staff within one organization more efficiently, decreasing caregiver training time. Additionally, a study that measures response generalization across PRS could be beneficial to examine.

Conclusion

Skill acquisition for PRS was not a primary dependent variable, and the PRS was not the primary subject in this study. However, the importance of their active and person-centered participation in this study must be considered. All three PRS selected the functional living skills they wanted to learn, provided input on their own goals and preferences during the teaching process, and were surveyed for their feedback on their participation. The simple steps to include the PRS in the study represent the bare minimum of person-centered thinking and practice: including the person as an active participant with agency about their own life. Further research should strive to implement person-centered practices in all studies for all participants, regardless of age, communication modality, or ability.

BST implemented with pre-planned response generalization tactics effectively teaches caregivers generalizable teaching skills. Caregiver trainers must consider

individualized and sometimes complex factors when training caregivers, including the caregiver's learning history and experience, individual and workplace culture, and self-determination. Although this study's generalization tactics provide a promising initial blueprint for training caregivers to teach and generalize functional living skills, additional time and effort is likely required for ongoing caregiver training to maintain skills or teach new skill sets. Caregiver training is a time-consuming and continuous process that should implement BST, including tactics explicitly designed to promote generalization. Caregiver trainers should consider the long-term goal of skill generalization in their initial planning and preparation for caregiver training.

Appendix A: Recruitment and Consent Materials

Participant (Parent/Guardian) Consent Form

Title of Research Study: Telehealth as a service delivery for skill acquisition with adults with intellectual or developmental disability

Investigator Team Contact Information: Jennifer McComas, Ph.D., BCBA

For questions about research appointments, the research study, research results, or other concerns, call the study team at: 612-624-5854

Investigator Name: Jennifer McComas, Ph.D., BCBA Investigator Departmental Affiliation: Educational Psychology Phone Number: 612-624-5854 Email Address: jmccomas@umn.edu	Student Investigator Name: Shawn Girtler, MS, BCBA Phone Number: (612) 624-6083 Email Address: sgirtler@umn.edu Study Staff: Rebecca Kolb, Ph.D., BCBA Phone Number: (612) 624-6083 Email Address: rkolb@umn.edu

Supported By: This research is supported by the Department of Educational Psychology

at the University of Minnesota.

Key Information About This Research Study

The following is a short summary to help you (your child/ward) decide whether or not you (your child/ward) will be a part of this research study. More detailed information is listed later on in this form. We ask that you read this form and ask any questions you have before agreeing to participate in this study.

What is research?

The goal of research is to learn new things in order to help people in the future. You (your child/ward), as an individual, may or may not be helped by volunteering for a research study.

Why am I being invited to take part in this research study?

We are asking you (your child/ward) to take part in this research study because you are interested in working with us to learn daily living skills.

What should I know about a research study?

- Someone will explain this research study to you.
- Whether or not you take part is up to you.

- You can choose that you will not take part.
- You can agree that you will take part and later change your mind.
- Your decision for you will not be held against you.
- You can ask all the questions you want before you decide.

Why is this research being done?

The purpose of the study is to teach activities of daily living skills to adults with intellectual and developmental disabilities in their natural environment, that is, in their home or community setting. The goal is to identify effective procedures to teach meaningful skills that increase your (your child/ward's) independence. Another aim of this study is to test the assessment and acquisition of skills for adults through telehealth technology. The use of telehealth technology will connect research staff with parents/care providers through password-protected internet and video conferencing.

How long will the research last?

The duration for an individual participant's participation in the study is 8 weeks at minimum and 36 months at maximum. This study will be individualized. The time expectation varies for each individual. You can express any concerns with time or the study procedures at any point during the study. It is your right to remove your consent to participate in the study. You can withdraw consent at any time and for any reason.

What will I need to do to participate?

If you agree to participate in this study, we would ask you to do the following:

- **Indirect Assessment/interview:** We will begin by asking you questions about your (your child/ward's) activities of daily living (ADLs, e.g., leisure, homecare, self-care). The questions will be a brief interview. Then we will tell you what types of activities and routines we want to observe. We will tell you what you (your child/ward) need to do during those observations.
- **Observations**: We would like permission for our research staff to conduct twice-weekly observations. We will observe others (parents/caretakers) providing direct services related to activities of daily living with you (your child/ward). We will record the observations. Recording allows us to review the observations for assessment and treatment planning. Each observation will last between 5 and 15 minutes. We will conduct 3-5 observations per day.
- **Direct Assessment:** We will complete a baseline assessment to identify your (your child/ward's) ability to complete ADL skill(s). We will use the Assessment of Functional Living Skills (AFLS) assessment. The AFLS assessment includes observation of others helping you (your child/ward) complete the ADL skill(s). The initial assessment may last up to 10 days. We will also conduct preference assessments. This helps us determine activities that are preferred by you (your child/ward). It also allows them to be actively involved in the study.
- **Treatment**: After the assessment, we will start teaching the targeted ADL skill(s).

The procedure used will depend on the results of the initial assessment. We will implement the procedure until the skill has reached the mastery criterion set before the treatment begins. We will select an ADL skill that is relevant to your life. Learning this skill would increase their independence and involvement in their environment. We will identify a teaching procedure (e.g., backward chaining, forward chaining). These teaching procedures require those that work with and care for you (your child/ward) to implement prompts. These prompts may include a gesture, a point, and/or physical guidance. All procedures will be individualized to your (your child/ward's) strengths, preferences, and learning history. We will have practice sessions. We will give you or those working with you (your child/ward) feedback to increase the chances the treatment that is being implemented is effective for developing ADL skills. We will also give you a written report of the assessment findings and instructions for treatment.

- **Maintenance**: We may follow up with the skills monthly for up to 36 months after enrollment in the study. We may follow up to assess whether or not the skill has been maintained.
- **Post-Treatment Questionnaire**: Following treatment you will be asked to complete the Treatment Acceptability Rating Form-Revised (TARF-R). The TARF-R is a questionnaire that has 20 questions and measures treatment acceptability.
- **Telehealth Technology:** We will work with you remotely with telehealth technology. We will use a password-protected web browser. Telehealth technology will involve equipment. We will provide it if you do not have it. We will provide directions and support to assist you. All sessions and observations will be recorded.
    - The equipment used may include:
        - Laptop computer or tablet
        - Ethernet connection and cables
        - External web camera
        - External microphones
        - Bluetooth headset

Is there any way that being in this study could be bad for me?

The study has the following risks:

- During this study, there is a small risk of loss of privacy. To address this risk, we will give you (your child/ward) a number for the study. Your (and your child/ward's) information will be linked to this number. The number will be stored in a locked, encrypted database. There will be no identifying information used in any publications from this study. Assessment and treatment will be conducted in your home, group home, and/or community settings via telehealth. There is a possibility that you, (your child/ward), individuals in your home, and/or care providers will feel that their privacy is invaded.

Will being in this study help me in any way?
We cannot promise any benefits to you or others from your taking part in this research. Possible benefits include the acquisition of daily living skills. There is also the possibility of benefits for parents/care providers through training. They may gain knowledge of how to assess and improve ADL skills for you (your child/ward) and other individuals in the future.

How many people will be studied?
We expect about 20 people will participate in this research study.

What happens if I say "Yes," but I change my mind later?

You can leave the research study at any time. No one will be upset by your decision. To leave the study, contact the investigator. The investigator will close out your (your child/ward's) participation. They will by finalize data collection and analysis, share assessment and treatment results with you, and cancel any upcoming sessions.

Choosing not to be in this study or to stop being in this study will not result in any penalty to you. You will not lose benefits to which you are entitled. This means that your choice not to be in this study will not negatively affect your relationship with the University of Minnesota.

What happens to the information collected for the research?

Efforts will be made to limit the use and disclosure of your (and your child/ward's) personal information and medical records. These records will be limited to people who need to review this information. We cannot promise complete confidentiality. Other individuals may inspect and copy your (your child/ward's) information. One organization is the Institutional Review Board (IRB). The IRB is a committee. It provides ethical and regulatory oversight of research. Other representatives of this institution may have access to your information. These representatives monitor or ensure compliance. We may publish the results of this research. Your name (your child/ward's name) and other identifying information will remain confidential.

Additional sharing of your information for mandatory reporting
If we learn about any of the following, we may be required or permitted by law or policy to report this information to authorities:

- Current or ongoing child or vulnerable adult abuse or neglect;
- Communicable, infectious or other diseases required to be reported under Minnesota's Reportable Disease Rule;

- Certain wounds or conditions required to be reported under other state or federal law; or
- Excessive use of alcohol or use of controlled substances for non-medical reasons during pregnancy.

Data Collected

Identifiers are removed from your identifiable private information or identifiable data that are collected during this research. Your information or data could be used for future research studies. Your information may be distributed to another investigator for future research studies. This could happen without your additional informed consent.

Whom do I contact if I have questions, concerns, or feedback about my experience?

This research has been reviewed and approved by an IRB within the Human Research Protections Program (HRPP). To share feedback privately with the HRPP about your research experience, call the Research Participants' Advocate Line at 612-625-1650 (Toll-Free: 1-888-224-8636) or go to z.umn.edu/participants. You are encouraged to contact the HRPP if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research participant.
- You want to get information or provide input about this research.

Will I have a chance to provide feedback after the study is over?

The HRPP may ask you to complete a survey that asks about your experience as a research participant. You do not have to complete the survey if you do not want to. If you do choose to complete the survey, your responses will be anonymous.

If you are not asked to complete a survey, but you would like to share feedback, please contact the study team or the HRPP. See the "Investigator Contact Information" of this form for study team contact information and "Whom do I contact if I have questions, concerns or feedback about my experience?" of this form for HRPP contact information.

The results of this study may also be used for teaching, publications, or presentation at scientific meetings.

Yes, I agree	**No, I disagree**	
__________		The investigator may audio or video record me and my child/ward

________ to aid with data analysis. The investigator will not share these recordings with anyone outside of the immediate study team.

________ ________ The investigator may audio or video record me and my child/ward for use in scholarly presentations or publications. My identity and my child/ward's identity may be shared as part of this activity, although the investigator will attempt to limit such identification. I understand the risks associated with such identification.

________ ________ The investigator may contact me in the future to see whether I am interested in participating in other research studies by Jennifer McComas.

Signature Block for Capable Adult:

Your signature documents your permission to take part in this research. You will be provided a copy of this signed document.

______________________________________ ___________________
Signature of Participant Date

____
Printed Name of Participant

______________________________________ ___________________
Signature of Person Obtaining Consent Date

____
Printed Name of Person Obtaining Consent

Signature Block for Adult Unable to Consent:

Your signature documents your permission for the named participant to take part in this research.

____
Printed Name of Participant

______________________________________ ___________________
Signature of Legally Authorized Representative Date

Printed Name of Legally Authorized Representative | Date

Signature of Person Obtaining Consent | Date

Printed Name of Person Obtaining Consent | Date

Participant (Parent/Guardian) Consent Form

Title of Research Study: Telehealth as a service delivery for skill acquisition with adults with intellectual or developmental disability
Investigator Team Contact Information: Jennifer McComas, PhD, BCBA

For questions about research appointments, the research study, research results, or other concerns, call the study team at: 612-624-5854

Investigator Name: Jennifer McComas, PhD, BCBA Investigator Departmental Affiliation: Educational Psychology Phone Number: 612-624-5854 Email Address: jmccomas@umn.edu	Student Investigator Name: Shawn Girtler, MS, BCBA Phone Number: (612) 624-6083 Email Address: sgirtler@umn.edu Study Staff: Rebecca Kolb, PhD, BCBA Phone Number: (612) 624-6083 Email Address: rkolb@umn.edu

Supported By: This research is supported by the Department of Educational Psychology at the University of Minnesota.

Key Information About This Research Study

The following is a short summary to help you decide whether or not to be a part of this research study. More detailed information is listed later on in this form. We ask that you read this form. We request you ask any questions you have before agreeing to have the participant to participate in this study.
What is research?

The goal of research is to learn new things in order to help people in the future. You, as an individual, may or may not be helped by volunteering for a research study.

Why am I being invited to take part in this research study?

We are asking you to take part in this research study because an individual that you work with (and/or their family) is interested in working with us. The goal of this research is to

teach daily living skills to this individual. You, as a direct care provider, would be assisting in the teaching procedures for this study.

What should I know about a research study?

- Someone will explain this research study to you.
- Whether or not you take part is up to you.
- You can choose not to take part.
- You can agree to take part and later change your mind.
- Your decision will not be held against you.
- You can ask all the questions you want before you decide.

Why is this research being done?

The purpose of the study is to teach activities of daily living skills to adults with intellectual and developmental disabilities. The study will take place in their natural environment. This may be their home or community setting. The goal is to identify effective procedures to teach meaningful skills. These skills may increase the participant's independence and autonomy. Another goal of this study is the use of telehealth. Specifically, to test the assessment and acquisition of skills for adults through telehealth technology. Password protected internet and video conferencing will be used.

How long will the research last?

The duration anticipated for an individual participant's participation in the study is 8 weeks at minimum and 36 months at maximum. This study is individualized. The time expectation varies for each individual. We encourage you to express any concerns with time or the study procedures at any point during the study. It is your right to remove your consent for the study. You can remove consent at any time and for any reason.

What will I need to do to participate?

If you agree to participate in this study, we may ask you to do the following:

- **Indirect Assessment/interview:** We will begin by asking you questions about the participant's activities of daily living (ADLs, e.g., leisure, homecare, self-care). The questions will be a brief interview. Then we will ask you what types of activities and routines we want to observe. We will tell you what you and the participant need to do during those observations.
- **Observations**: We will observe you providing direct services related to activities of daily living with the participant. We will record the observations. Recording allows us to review the observations for assessment and treatment planning. Each observation will last between 5 and 15 minutes. We will conduct 3-5 observations per day. We will conduct 1-3 sessions per week.
- **Direct Assessment:** We will complete a baseline assessment to identify the participant's ability to complete ADL skill(s). We will use the Assessment of Functional Living Skills (AFLS) assessment. The AFLS assessment includes

observation of you helping the participant complete the ADL skill(s). The initial assessment may last up to 10 days. We will also conduct preference assessments. This helps us determine activities that are preferred by the participant. It also allows them to be actively involved in the study.

- **Treatment**: After the assessment, we will start teaching the targeted ADL skill(s). The procedure used will depend on the results of the initial assessment. We will implement the procedure until the skill has reached the mastery criterion set before the treatment begins. We will select an ADL skill that is relevant to the participant's life. Learning this skill would increase their independence and involvement in their environment. We will identify a teaching procedure (e.g., backward chaining, forward chaining). These teaching procedures require those that work with and care for the participant to implement prompts. These prompts may include a gesture, a point, and/or physical guidance. All procedures will be individualized to the participant's strengths, preferences, and learning history. We will have practice sessions. We will give you feedback to increase the chances the treatment you are implementing is effective for developing ADL skills. We will also give you a written report of the assessment findings and instructions for treatment.
- **Maintenance**: We may follow up with the skills monthly for up to 36 months after enrollment in the study. We may follow up to assess whether or not the skill has been maintained.
- **Post-Treatment Questionnaire**: Following treatment you will be asked to complete the Treatment Acceptability Rating Form-Revised (TARF-R). The TARF-R is a questionnaire that has 20 questions and measures treatment acceptability.
- **Telehealth Technology:** We will work with you remotely with telehealth technology. We will use a password-protected web browser. Telehealth technology will involve equipment. We will provide it if you do not have it. We will provide directions and support to assist you. All sessions and observations will be recorded.

    - The equipment used may include:
        - Laptop computer or tablet
        - Ethernet connection and cables
        - External web camera
        - External microphones
        - Bluetooth headset

Is there any way that being in this study could be bad for me?

The study has the following risks:

- The participant may engage in challenging behavior during sessions. There is a small chance injury may occur as a result of the challenging behavior.
- During this study, there is a small risk of loss of privacy. To address this risk, we will assign you a number for the study. Your information will be linked to this

number. The number will be stored in a locked, encrypted database. No identifying information used in any publications from this study. Assessment and treatment will be conducted via telehealth in the participant's home, group home, and/or community settings. There is a possibility that you, the participant, the participant's family, and/or care providers will feel that their privacy is invaded.

Will being in this study help me in any way?

We cannot promise any benefits to you or others from your taking part in this research. Possible benefits include the acquisition of daily living skills for the participant. There is also the possibility of benefits for parents/care providers through training. You may gain knowledge of how to assess and improve ADL skills.

How many people will be studied?

We expect about 20 people will participate in this research study.

What happens if I say "Yes", but I change my mind later?

You can leave the research study at any time. No one will be upset by your decision. To leave the study, contact the investigator. The investigator will close out your participation. They will by finalize data collection and analysis, share assessment and treatment results with you, and cancel any upcoming sessions.

Choosing not to be in this study or to stop being in this study will not result in any penalty to you. You will not lose benefits to which you are entitled. This means that your choice not to be in this study will not negatively affect your relationship with the University of Minnesota.

What happens to the information collected for the research?

We will limit the use and disclosure of your personal information. These records will be limited to people who need to review this information. We cannot promise complete confidentiality. Other individuals may inspect and copy your and the participant's information. One organization is the Institutional Review Board (IRB). The IRB is a committee. It provides ethical and regulatory oversight of research. Other representatives of this institution may have access to your information. These representatives monitor or ensure compliance. We may publish the results of this research. Your name, the participant's name, and other identifying information will remain confidential.

Additional sharing of your information for mandatory reporting

If we learn about any of the following, we may be required or permitted by law or policy to report this information to authorities:

- Current or ongoing child or vulnerable adult abuse or neglect;
- Communicable, infectious or other diseases required to be reported under Minnesota's Reportable Disease Rule;
- Certain wounds or conditions required to be reported under other state or federal law; or
- Excessive use of alcohol or use of controlled substances for non-medical reasons during pregnancy.

Data Collected

Identifiers are removed from your identifiable private information. Identifiers are removed from data that are collected during this research. Your information or data could be used for future research studies. Your information may be distributed to another investigator for future research studies. This could happen without your additional informed consent.

Whom do I contact if I have questions, concerns or feedback about my experience?

This research has been reviewed and approved by an IRB within the Human Research Protections Program (HRPP). To share feedback privately with the HRPP about your research experience, call the Research Participants' Advocate Line at 612-625-1650 (Toll Free: 1-888-224-8636) or go to z.umn.edu/participants. You are encouraged to contact the HRPP if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research participant.
- You want to get information or provide input about this research.

Will I have a chance to provide feedback after the study is over?

The HRPP may ask you to complete a survey. The survey asks about your experience as a research participant. You do not have to complete the survey if you do not want to. If you do, your responses will be anonymous.

If you are not asked to complete a survey, but you would like to share feedback, please contact the study team or the HRPP. See the "Investigator Contact Information" of this form for study team contact information and "Whom do I contact if I have questions, concerns or feedback about my experience?" of this form for HRPP contact information.

The results of this study may also be used for teaching, publications, or presentation at scientific meetings.

Yes, I agree	No, I disagree	
________	________	The investigator may audio or video record me to aid with data analysis. The investigator will not share these recordings with anyone outside of the immediate study team.
________	________	The investigator may audio or video record me for use in scholarly presentations or publications. My identity may be shared as part of this activity, although the investigator will attempt to limit such identification. I understand the risks associated with such identification.
________	________	The investigator may contact me in the future to see whether I am interested in participating in other research studies by Jennifer McComas.

Signature Block for Participating Staff Member:

Your signature documents your permission to take part in this research. You will be provided a copy of this signed document.

_______________________________________ ________________

Signature of Participant Date

____

Printed Name of Participant

_______________________________________ ________________

Signature of Person Obtaining Consent Date

____

Printed Name of Person Obtaining Consent

Assent Script

Project Title: Telehealth as a service delivery for skill acquisition with adults with intellectual or developmental disability
Principal Investigator: Jennifer McComas
Supported by: University of Minnesota, Department of Educational Psychology

Hi, my name is Shawn Girtler. If you have any questions about what I am telling you, you can ask me at any time.

I want to tell you about a research study we are doing. In this study, we want to find out more about how to teach people to complete self-care activities.

You are being asked to be in this because you are an adult with a disability.

If it is okay with you, I will ask you to work with your parents/caregivers to learn a new skill. You can help pick the skill you want to do. This will take two to six months.

If you get too tired, scared, or if this seems too hard just let me know. If you want to stop at any time, just tell me and we will stop.

You do not have to be in this study. It is totally up to you. You can say yes now and still change your mind later. All you have to do is tell me. No one will be mad at you if you change your mind.

Your parents/people taking care of you say it is okay for you to be in this study. If you have questions for me or for your parents/people who care for you, you can ask them now or later.

End of verbal script.

To be completed by person obtaining verbal assent from the participant:

Participant's response: ☐Yes ☐No

Check which applies below:
☐The participant is capable of understanding the study
☐The participant is not capable of understanding the study

____
Child's/Participant's Name (printed)

__________________________________ ______________
Name (printed) and Signature of Person Obtaining Consent Date

UCSD Brief Assessment of Capacity to Consent (UBACC)

Instructions: After reviewing study details and the informed consent document, explain that you are going to ask a few brief questions about the study. Participants should be allowed to refer to the Informed Consent Form when answering these questions but should be encouraged to respond in their own words. If a participant has trouble understanding one of the questions on the UBACC, rephrase the question. Rate the participant's responses on a scale of 0 – 2, with "0" being the lowest (little to no understanding of this aspect of the study) and "2" being the highest (clear understanding of this aspect of the study). A score of 15 or higher is needed for inclusion in the study. If a participant scores lower than 15, the person obtaining consent can review the study details and have the patient return on another day in order to re-do the UBACC and obtain consent.

	Score
1. What is the purpose of the study that was just described to you? Response: (2 = To teach daily living skills via telehealth)	0 1 2
2. What makes you want to consider participating in this study? Response: (2 = To learn a new daily living skill)	0 1 2
3. Do you believe this is primarily research or primarily treatment? Response: (2 = Research)	0 1 2
4. Do you have to be in this study if you do not want to participate? Response: (2 = No)	0 1 2
5. If you withdraw from this study, will you still be able to receive regular treatment? Response: (2 = Yes)	0 1 2
6. If you participate in this study, what are some of the things you will be asked to do? Response: (2 = Try a new skill, allow others to help me learn a skill, be on a video)	0 1 2

7. Please describe some of the risks or discomforts that people may experience if they participate in this study. Response: (2 = May feel like privacy is invaded)	0 1 2
8. Please describe some of the possible benefits of this study. Response: (2 = Might learn a new skill)	0 1 2
9. Is it possible that this study will not have any benefit to you? Response: (2 = Yes)	0 1 2
10. Who will pay for medical care if you are injured as a direct result of participating in this study? Response: (2 = These costs would be billed to me or my insurance company)	0 1 2

Total Score: ______

Recruitment Flyer (front)

ADULTS WITH IDD: TEACHING ACTIVITIES OF DAILY LIVING

HEALTH AND BEHAVIOR STUDIES

RESEARCH QUESTIONS

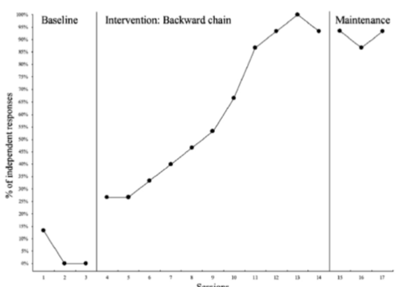
Activities of daily living:

Activities of daily living are the daily activities that allow individuals to be active participants in their lives and in their homes. Research shows that adults with intellectual and developmental disabilities can learn and benefit from these skills. The goal is to identify effective procedures to teach meaningful skills that increase your child's independence and autonomy.

Utility and acceptability of telehealth for connecting with consultants:

We are interested in learning what families think about consulting via internet to improve their child's activities at daily living skills and independence.

ACTIVITIES OF DAILY LIVING SESSION DATA



EXAMPLES OF SKILLS THAT CAN BE TAUGHT VIA TELEHEALTH

Homecare

- Doing laundry
- Cleaning tasks
- Loading a dishwasher

Self-care

- Hygiene skills
- Making a meal
- Increasing physical activity

Leisure skills

- Using the computer
- Using a phone
- Using a tablet
- Playing a game with friends

IN THE COMFORT AND PRIVACY OF YOUR HOME

Activities of daily living assessment:

We will begin by asking you questions in a brief interview about your adult child's activities of daily living (ADLs; e.g. leisure, homecare, self-care). After the interview, we will talk with you about what types of naturally occurring activities and routines we want to observe and what we will ask you to do during those observations. We will complete a baseline assessment to identify your child/ward's current levels of responding using the Assessment of Functional Living Skills (AFLS) assessment.

Assessment, observation, caregiver coaching and consultation via telehealth:

Telehealth uses video-conferencing technology to connect University research personnel with individuals in their homes via the Internet. We are interested in the effectiveness of assessment, observation, and coaching parents/care-providers during the skills acquisition process via telehealth so that geography is not a barrier to skills training.

Recruitment Flyer (back)

FREQUENTLY ASKED QUESTIONS

What is the purpose of the studies?

The purpose of the study is to teach activities of daily living skills to adults with intellectual and developmental disabilities in their natural environment, that is, in their home or community setting. Another goal of this study is to test the assessment and acquisition of skills for adults through telehealth technology. The use of telehealth technology will connect research staff with parents/care providers through password protected internet and video conferencing.

Where do these studies take place?

Skills training is often most beneficial when studies take place in the natural settings of the individual. **Therefore, assessment and intervention sessions will take place in homes. Computer, camera, and microphone equipment can be mailed to you to set up remote, telehealth sessions from your home with University personnel.**

What do telehealth sessions look like?

Telehealth sessions use video-conferencing software to connect you in your home remotely with study personnel at the University to receive assessment, observation, and coaching on skills training.

Are there any costs to participating?

There is no cost to participate in any of the studies. All materials will be provided free of charge, and research staff will set up telehealth sessions with you.

Are there potential benefits to participating?

There may be potential benefits to participating including learning new daily living skills and increased independence and autonomy.

CONTACT US

To participate, get additional information or ask a question, please contact:

University of Minnesota Department of Educational Pschology

Dr. Jennifer McComas

jmccomas@umn.edu

(612) 624-5854

Or

Shawn Girtler

sgirtler@umn.edu

Appendix B: Behavior Skills Training Materials

Skill Set 1: Task Analysis and Behavior Chaining Strategies (PowerPoint Slides)

Skill Set 1:
Task Analysis and Behavior Chaining

University of Minnesota
Shawn Girtler, MS, BCBA

What is a task analysis?

- *A task analysis is……*
  - "The process of breaking down a complex skill or series of behaviors into **smaller**, **teachable** units"

Why do we use task analyses?

- Breaking down a complex skill into smaller steps will lead to greater success
- Each person learns in a unique way.
- Task analyses are individualized to each student's learning style.

When do we use task analyses?

- To teach a complex skill or a skill with multiple steps
- Types of skills:
  - Hygiene
  - Chores
  - Cooking.
  - Leisure
- Examples:
  - Brushing your teeth
  - Putting on deodorant
  - Sorting laundry
  - Doing dishes
  - Accessing the community
  - The options are endless!

brush teeth

deodorant

How to write a task analysis?

1. Identify target functional living skill.
2. Break down skill into individualized, measurable steps.
3. Execute the task analysis steps yourself.
4. Edit the task analysis based on step 3.
5. Validate the task analysis steps with the the learner.
6. Edit the task analysis based on step 5.
7. Create task analysis data collection sheet.
8. Determine an appropriate behavior chaining procedure.

Reviewing and editing a task analysis

- Once you have your task analysis created:
  1. Execute the task analysis steps yourself
     - Ask yourself:
       - Are all the steps in the right order?
       - Are any steps missing?
     - Edit the task analysis to include any missing steps
  2. Execute the task analysis steps with the person receiving services
     - Ask yourself:
       - Are all the steps in the right order?
       - Are any steps missing?
     - Edit the task analysis to include any missing steps

Overview of chaining

- Chaining = the instructional procedure of reinforcing individual responses occurring in a sequence to form a complex behavior
- Each link serves as a conditioned reinforcer for the link immediately preceding it
- Example:
  1. Clear desk of other materials (S^{D} for 2)
  2. Locate math workbook (S^{R+} for 1; S^{D} for 3)
  3. Locate pencil (S^{R+} for 4; S^{D} for 2)
  4. Wait quietly for instructions (S^{R+} for 4)

Backward chaining

- Backward chaining: last component taught first, skills are acquired in reverse order
- Intuitively appealing- reinforcement is always delivered at a natural time, i.e. the end of the task
- Which tasks would you teach using a backward chain?
  - Brushing teeth
  - Tying shoes
  - Preparing a snack or meal

Forward chaining

- Starts with first link in chain until mastered
  - Subsequent steps can be taught separately or in a chain
- Which tasks would you teach using a forward chain?
  - Completing a worksheet
  - Laundry
  - Making a sandwich
  - Any task without a reinforcing ending

Total task presentation

- Caregiver requires the student to preform all the steps in the sequence until all the skills are mastered
- When to use a total task presentation:
  - When the learner already completes many steps in the chain
  - When the learner completes most steps in the chain and but requires support to increase thoroughness
    - Example:
      - Increase quality or duration of tooth brushing

Think about reinforcement

- Who will provide the reinforcement?
- What is the reinforcing item?
  - Does it occur naturally at the end of the behavior chain?
  - Do you need to add in an additional reinforcing item or activity?
  - What activity does the learner want to do after they complete the functional living skill?
- Where will the reinforcing item or activity be?
  - Can they access it in the same location as they are completing the activity?
- When will reinforcement be available?
  - When does it occur in the behavior chain?
- How will the learner access the reinforcer?

Example:

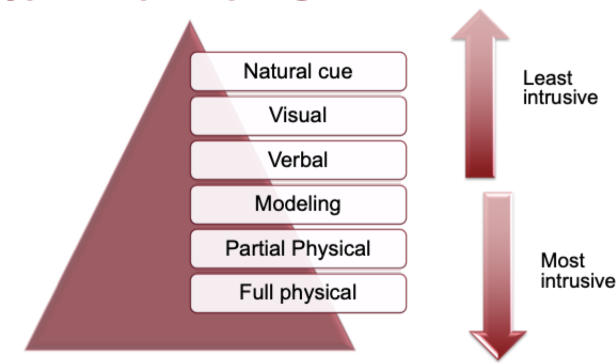
Task: Brushing Hair

- Materials: brush & bathroom drawer
- Reinforcer: Sticker on their hygiene chart
- Steps:
  1. Retrieve brush from hygiene drawer.
  2. Brush hair top to bottom 3 times on the right side of head.
  3. Brush hair top to bottom 3 times on the left side of head.
  4. Brush hair top to bottom 3 times on back side of head.
  5. Return brush to hygiene drawer.

Think and respond:

- In this example, the person learning to brush their hair completes only step 1 independently
  - All other steps require prompting to complete
- What chaining procedure would you use to teach hair brushing?
  a) Forward chaining
  b) Backward chaining
  c) Total task

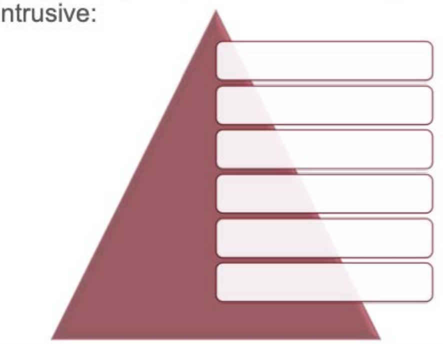
Types of prompting:



Provide prompting using the least intrusive prompt and increasing support as needed to keep the learner successful.

Think and respond:

- Say the types of prompts in order starting from least to most intrusive:



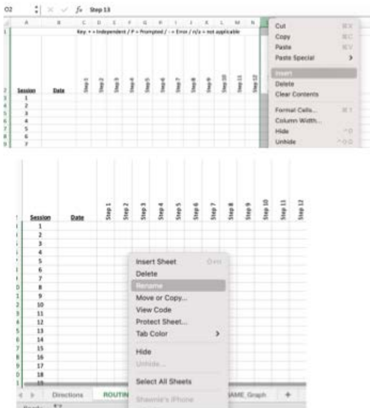
Create your task analysis

1.Identify target functional living skill using input from the person receiving services
2.Break down the skill into individualized, measurable steps.
3.Execute the task analysis steps independently (self role-play)
4.Edit the task analysis based on step 3 - as needed.
5.Complete the task analysis with the participant receiving services and confirm that: 1. The task analysis steps are in the correct order 2. The task analysis is complete (i.e. there are missing steps)
6.Edit the task analysis based on step 5.
7.Determine an appropriate behavior chaining procedure.
8.Reinforcement is identified that is appropriate for the person receiving services

Where, when, and how is reinforcement happening?

Creating the task analysis data sheet & graph

1. Open the task analysis data sheet template
2. Enter each step in its won cell starting at cell C:2 on the tab "RoutineName_Data"
3. Add additional rows by right clicking on a letter between C and S and selecting "insert
4. Highlight the target teaching steps
5. Update the tab "RoutineName_Data" with the name of your routine
   – Example: "Snack_Data"
6. Update the tab "RoutineName_Graph" with the name of your routine
   – Example: "Snack_Graph"
7. Rename the title of the graph



References

- Cooper, J. O., Heron, T. E., & Heward, W. L. (2020). *Applied Behavior Analysis* (3rd ed.). Pearson.

Skill Set 2: Data Collection and Graphing (PowerPoint Slides)

Skill Set 2:
Data Collection and Graphing

University of Minnesota

Shawn Girtler, MS, BCBA

Before you start teaching:

- Review your data sheet:
  - What type of chaining are you using?
  - Which steps are you teaching?
    - Are they highlighted on your data sheet?
  - Which steps are you prompting?
  - How will reinforcement happen?
  - Do you have the materials that you need?

Teach your task analysis!

After teaching:

- Enter your data in the data sheet for each step
  - + (independent)
  - - (error)
  - P (prompted)
  - n/a (step not applicable for that session)
- Double check that the precent calculated for independent sets is accurate
- Confirm that your data is represented on the graph

Feedback & Goal Setting:

- What went well?
  - What skills are you performing independently?
- What skills are you requiring prompting to complete?
- What are you goals for next session?
- What additional supports do you need for success?

References

- Cooper, J. O., Heron, T. E., & Heward, W. L. (2020). *Applied Behavior Analysis* (3rd ed.). Pearson.

Skill Set 3: Data-based Decision Making (PowerPoint Slides)

Skill Set 3:
Data-Based Decision Making

University of Minnesota
Shawn Girtler, MS, BCBA

Reviewing data

IF	THEN
The target step(s) are independent (+++) for 3 consecutive sessions:	Advance to the next step, for example: • Forward chain: Advance to steps 1-3 from steps 1-2 • Backward chain: Advance to steps 11-13 from steps 12-13 • Total task: Choose a new step to target Highlight your new target steps on your data sheet
If a target teaching step is still requiring prompts after 3 consecutive sessions	Use a more intrusive/supportive prompt to teach the target step
If caregiver(s) are performing steps of the chain for the learner	Reevaluate the completeness of the task chain Add additional steps as needed
If the participant receiving services demonstrates reduced motivation to complete the task	Shorten the task ,for example: • Shorten the total number of tasks Add (additional) extrinsic reinforcement to the chain

Case examples:

- What type of chaining procedure is being used?
- What would you do in this case?

Step	Performance			
	9/20	9/21	9/22	9/23
1. Retrieve brush from hygiene drawer.	P	P	P	P
2. Brush hair top to bottom 3 times on the right side of head.	P	P	P	P
3. Brush hair top to bottom 3 times on the left side of head.	P	P	P	P
4. Brush hair top to bottom 3 times on back side of head.	P	+	+	+
5. Return brush to hygiene drawer.	+	+	+	+

Case examples:

- What type of chaining procedure is being used?
- What would you do in this case?

Step	Performance			
	9/20	9/21	9/22	9/23
1. Retrieve brush from hygiene drawer.	+	+	+	+
2. Brush hair top to bottom 3 times on the right side of head.	+	+	+	+
3. Brush hair top to bottom 3 times on the left side of head.	+	+	+	+
4. Brush hair top to bottom 3 times on back side of head.	P	P	P	P
5. Return brush to hygiene drawer.	P	P	P	P

Case examples:

- What type of chaining procedure is being used?
- What would you do in this case?

Step	Performance			
	9/20	9/21	9/22	9/23
1. Retrieve brush from hygiene drawer.	P	P	P	P
2. Brush hair top to bottom 3 times on the right side of head.	P	P	P	P
3. Brush hair top to bottom 3 times on the left side of head.	P	P	P	P
4. Brush hair top to bottom 3 times on back side of head.	gesture	gesture	gesture	gesture
5. Return brush to hygiene drawer.	+	+	+	+

Case examples:

- What type of chaining procedure is being used?
- What would you do in this case?

Step	Performance			
	9/20	9/21	9/22	9/23
1. Retrieve brush from hygiene drawer.	+	+	+	+
2. Brush hair top to bottom 3 times on the right side of head.	+	+	+	+
3. Brush hair top to bottom 3 times on the left side of head.	+	+	+	+
4. Brush hair top to bottom 3 times on back side of head.	P	P	P	P
5. Return brush to hygiene drawer.	+	+	+	+

Feedback & Goal Setting:

- What went well?
  - What skills are you performing independently?
- What skills are you requiring prompting to complete?
- What are you goals for next session?
- What additional supports do you need for success?

References

- Cooper, J. O., Heron, T. E., & Heward, W. L. (2020). *Applied Behavior Analysis* (3rd ed.). Pearson.

Appendix C: Data Collection Sheets

Session Data Collection Sheet - Skill Set 1: Task Analysis and Behavior Chaining

Caregiver participant number: ________________ *Researcher initials:* _____________

Date: ________________ *Time:* ______________

Functional Living Skill Targeted: ____

Session type: ☐Baseline ☐Teaching ☐Generalization

1. Break down the skill into individualized, measurable steps.	
2. Execute the task analysis steps independently (self-role-play)	
3. Edit the task analysis based on step 3 - as needed.	
4. Complete the task analysis and confirm that: a. The task analysis steps are in the correct order b. The task analysis is complete (i.e., there are no missing steps)	
5. Edit the task analysis based on step 5.	
6. Determine an appropriate behavior chaining procedure.	
7. Reinforcement is identified that is appropriate for the PRS	
8. Enter each step in its own cell starting at cell C:2 on the tab "ROUTINE NAME_Data"	
9. Add additional rows by right clicking on a letter between C and S and selecting "insert"	
10. Highlight the target teaching steps	
11. Update the tab "ROUTINE NAME_Data"	
12. Update the tab "ROUTINE NAME_Graph"	
13. Rename the graph "ROUTINE NAME graph"	

+ = Independent / - = Error

Session Data Collection Sheet – Skill Set 2: Data Collection and Graphing

Caregiver participant number: ________________ *Researcher initials:* _____________

Date: ________________ *Time:* ______________ ☐Primary ☐IOA

Functional Living Skill Targeted: ____

Session type: ☐Baseline ☐Teaching ☐Generalization

14. Correct chaining procedure was used.	
15. All non-target teaching steps are prompted using least-to-most prompting	
16. All target teaching steps are prompted only as needed to avoid an error	
17. Reinforcement is provided following the target/taught steps	
18. Data entered into data sheet correctly for all steps using the following codes as either + (independent), - (error), P (prompted), and n/a (step not applicable for that session):	
a. Accurate data collection on task analysis step 1	
b. Accurate data collection on task analysis step 2	
c. Accurate data collection on task analysis step 3	
d. Accurate data collection on task analysis step 4	
e. Accurate data collection on task analysis step 5	
f. Current target teaching steps are highlighted on the data sheet	
19. Correct percent is calculated for independent steps	
20. Graph includes all collected data	

+ = Independent / - = Error

Session Data Collection Sheet – Skill Set 3: Data-based Decision Making

Caregiver participant number: ________________ *Researcher initials:* _____________

Date: ________________ *Time:* ______________ ☐Primary ☐IOA

Functional Living Skill Targeted: ____

Session type: ☐Baseline ☐Teaching ☐Generalization

Item	
21. Mastering steps: Caregiver moves the PRS onto the next target step following 3 consecutive independent responses across 3 separate sessions	
22. Selecting next target: Correct target is selected based on chaining type: a. Backward chain: The previous set is selected as a teaching target b. Forward chain: the following step is selected as teaching target c. Total task: A previously prompted step is selected as a teaching target	
23. If a target teaching step is still requiring prompts after 3 consecutive sessions, prompting level is increased	
24. If caregiver(s) are performing steps of the chain, reevaluate the completeness of the task chain and add additional steps as needed	
25. If the PRS demonstrates reduced motivation to complete the task, the caregiver decides to: a. Shorten the task (i.e., a fewer number of total steps are taught). b. Add additional extrinsic reinforcement to the chain	

+ = Independent / - = Error

Procedural Fidelity Data Sheet – Behavior Skills Training

Session number: ________________ *Researcher initials:* ______________

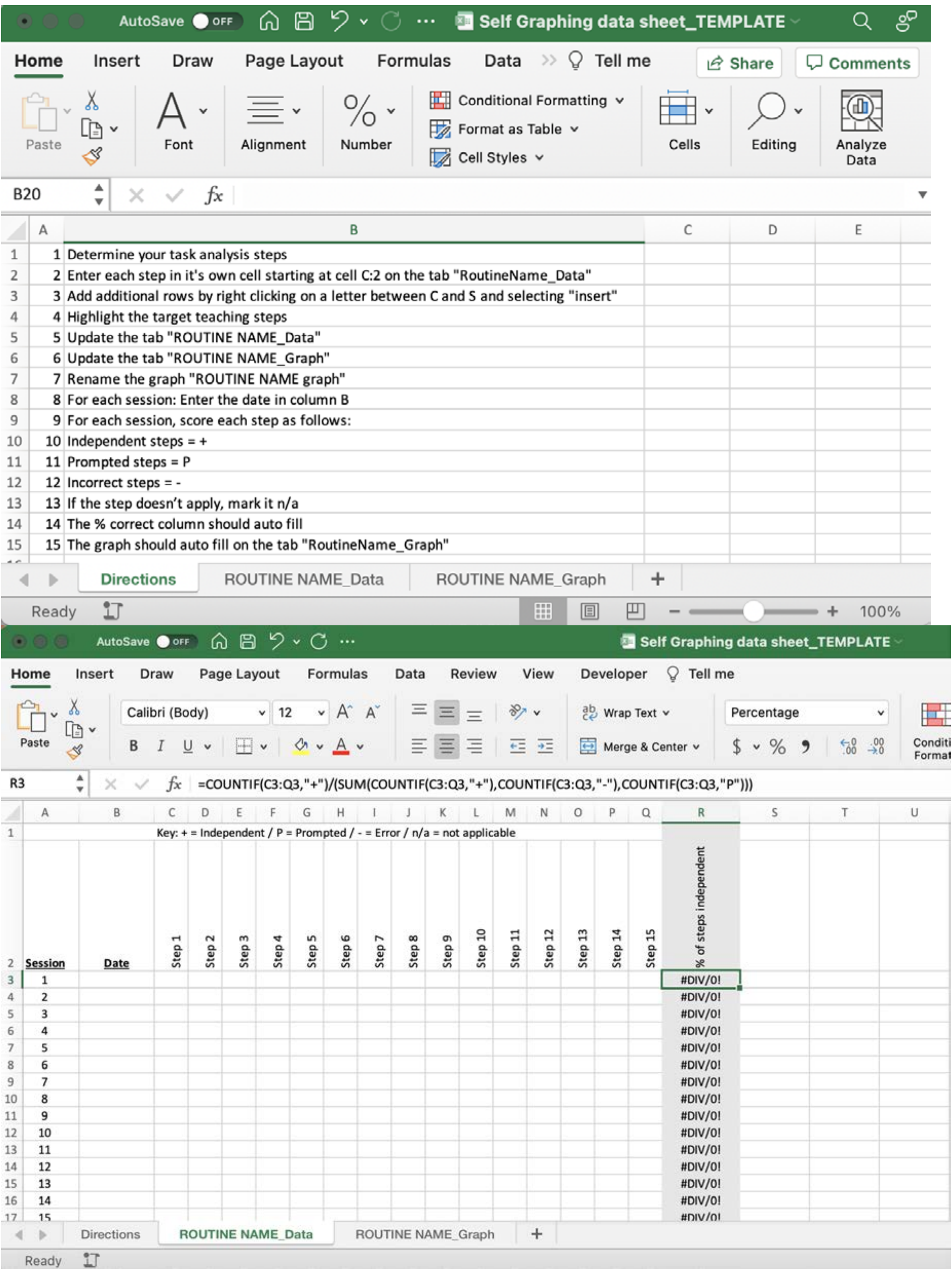
Date: ________________ *Time:* ______________ ☐Primary ☐IOA

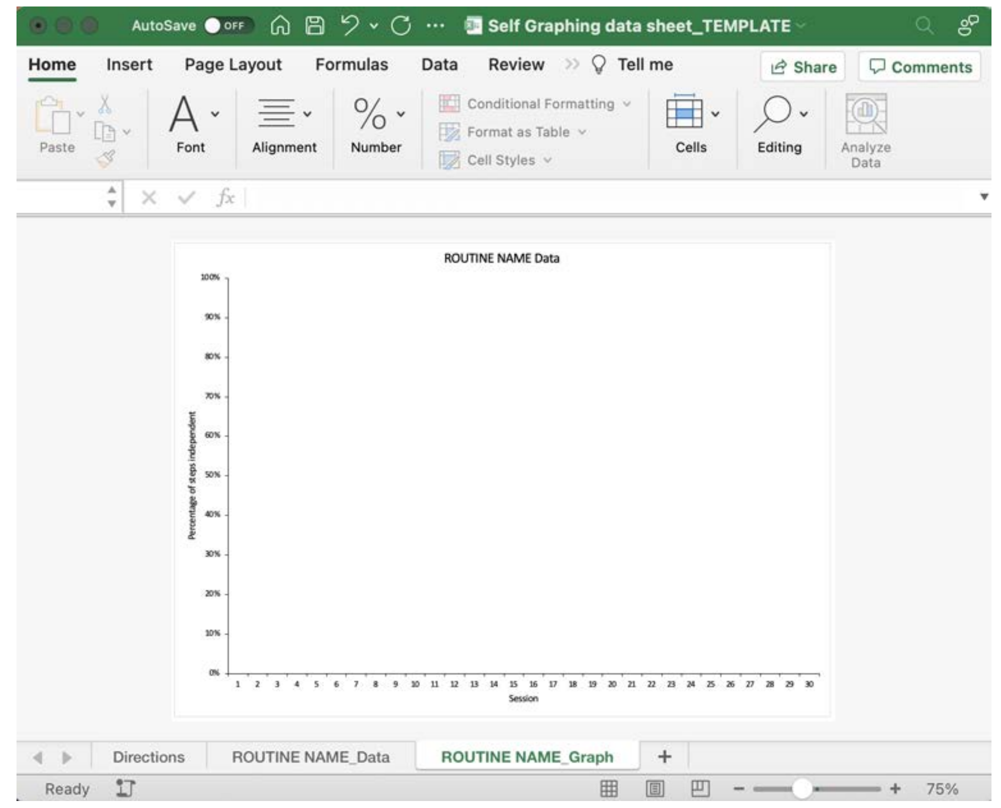
Skill Set Targeted: ☐1 ☐2 ☐3

1. Provided rationale for the target skill being trained.	
2. Vocally described the steps of the target skill.	
3. Provided caregiver participant with written summary of the target skill	
4. Demonstrated target skill.	
5. Observed caregiver participant practice performing the target skill.	
6. Observed and recorded caregiver participant's correct vs. incorrect performance of the target skill.	
7. Provided supportive and corrective feedback to caregiver participant.	
8. Repeated steps 6 and 7 until the caregiver participant correctly performed target skill.	

+ = Independent
P = Prompted
- = Error

Self-Graphing Task Analysis Data Collection Sheet - Example




AutoSave
OFF
Self Graphing data sheet_TEMPLATE
Home
Insert
Page Layout
Formulas
Data
Review
Tell me
Share
Comments
Paste
Font
Alignment
Number
Conditional Formatting
Format as Table
Cell Styles
Cells
Editing
Analyze Data
ROUTINE NAME Data
Percentage of steps independent
Session
Directions
ROUTINE NAME_Data
ROUTINE NAME_Graph
Ready
75%

Appendix D: Functional Living Skills Task Analyses

Functional Living Skills Task Analysis Steps for Bennett

Functional Living Skill	Step Number	Step Description
Playing Sorry	1.	Get Sorry game (in closet)
	2.	Put game on table
	3.	Open Box
	4.	Open up board
	5.	Set up his own pieces on start
	6.	Put cards face down on designated spot
	7.	Determine who goes first
	8.	Draw a face down card
	9.	Reads full direction instruction on card out loud
	10.	Chose which option on card
	11.	Move piece respectively
	12.	Place the card face up in discard pile
	13.	Waits for others to take turn
	14.	Repeats steps 8-13 for 2nd turn
	15.	Repeats steps 8-13 for 3rd turn
	16.	Repeats steps 8-13 for 4th turn
	17.	Puts pieces in box

	18.	Puts cards in box
	19.	Folds and puts board in box
	20.	Puts lid on box
	21.	Puts Sorry game away (in closet)
Starting Guitar Hero	1.	Turn on TV
	2.	Turn on Wii
	3.	Change input to "COMP"
	4.	Change game disc to Aerosmith Guitar Hero
	5.	Select Guitar Hero game from WII menu
	6.	Click start
	7.	Connect Wii remote to guitar
	8.	Scroll down to "quickplay"
	9.	Press green button
	10.	Scroll to select any song
	11.	Press green button
	12.	Press green button to select "easy" difficulty
Garage Band	1.	Open Garage Band
	2.	Choose “empty project”
	3.	Create software instrument
	4.	Choose instrument

	5.	Click "window"
	6.	Click "show musical typing"
	7.	Click red recording button

Functional Living Skills Task Analysis Steps for Marcus

Functional Living Skill	Step Number	Step Description
Making a Smoothie	1.	Gather smoothie recipe
	2.	Gather liquid measuring cup
	3.	Gather frozen fruit from freezer
	4.	Gather milk from fridge
	5.	Plug in NutriBullet
	6.	Take blender lid off of NutriBullet OR asks for help
	7.	Measure 2 cups of fruit
	8.	Pour fruit into NutriBullet
	9.	Measure 1 cup of milk into NutriBullet
	10.	Pour milk into NutriBullet
	11.	Put blender lid on NutriBullet
	12.	Put cup with lid onto NutriBullet base
	13.	Push and hold cup on base for 15 seconds (count to 15)
	14.	Grab glass from cupboard

	15.	Lift cup with lid from NutriBullet base
	16.	Take blender lid off of NutriBullet OR asks for help
	17.	Pour smoothie into cup
	18.	Put frozen fruit in freezer
	19.	Put milk in fridge
	20.	Rinse NutriBullet cup in sink
	21.	Unplug NutriBullet
	22.	Enjoy smoothie
Starting Guitar Hero	1.	Grab the TV remote
	2.	Press power button on the TV remote
	3.	Switch input to COMP (maybe n/a)
	4.	Turn on Wii console
	5.	Get the Wii sports game disk (maybe n/a)
	6.	Put in the Wii sports game disk (maybe n/a)
	7.	Turn on Wii controller
	8.	Select Wii sports icon from the Wii menu
	9.	Once Wii sports is open, press A + B
	10.	Pick the sport you would like to play
	11.	Pick number of players
	12.	Pick the Mii you would like to use

Guess Who	1.	Get Guess Who from the game cabinet
	2.	Find a place to play the game
	3.	Take out game boards
	4.	Flip game board so that all of the mystery cards are facing the player
	5.	Grab a random mystery card and place it in the slot in front of your tray. Make sure that the other player does not see the card.
	6.	(first opportunity only) When asked a question, answer yes or no
	7.	(first opportunity only) On your turn, ask a yes/ no question (can be from the list)
	8.	(first opportunity only) If the answer is "yes", leave up all of the people with the characteristic from the question
	9.	(first opportunity only) If the answer is "no", put down all of the people without the characteristic from the question
	10.	Keep taking turns asking questions until only one card is up
	11.	When you are ready to guess the person on the other player's mystery card, ask, "Is your person..."
	12.	If your guess is wrong, you lose the game. If your guess is right you win the game! (may be n/a)
	13.	Clean up game when it is finished

Functional Living Skills Task Analysis Steps for Simon

Functional Living Skill	Step Number	Step Description
Heating up food in microwave	1.	Put food on plate
	2.	Arranges food
	3.	Walks plate to microwave
	4.	Opens microwave

	5.	Puts plate in Microwave
	6.	Closes door
	7.	Set timer for food
	8.	Waits for timer to beep
	9.	Opens microwave door
	10.	Gets towel/oven mitt (may be n/a)
	11.	Takes food to table
	12.	Closes microwave door
	13.	Gets condiments (may be n/a)
Logging into computer	1.	Walks to computer and sits down
	2.	Turns on monitor
	3.	Turns on caps lock
	4.	Types 1st letter/number
	5.	Types 2nd letter/number
	6.	Types 3rd letter/number
	7.	Types 4th letter/number
	8.	Types 5th letter/number
	9.	Types 6th letter/number
	10.	Types 7th letter/number
	11.	Types 8th letter/number

	12.	Types 9th letter/number
	13.	Press “return”
Setting up an art project	1.	Walks to art room
	2.	Grabs paper from art room or asks for paper from staff room
	3.	Grabs writing utensil(s)
	4.	Sharpens pencil (may be n/a)
	5.	Sits down in chair
	13.	Begins project

Visual Support used for Marcus

Smoothie Recipe

Recipe: Make a Smoothie

Get measuring cup

Get frozen fruit and milk

Plug in NutriBullet

Take lid of off cup

Pour milk to 1 cup line

Put 1 scoop of fruit in cup

Put lid on cup

Put cup on NutriBullet base
Push and count to 15

Get glass from cupboard

Lift cup and take off lid

Pour smoothie in glass

Put fruit and milk away

Rinse NutriBullet cup

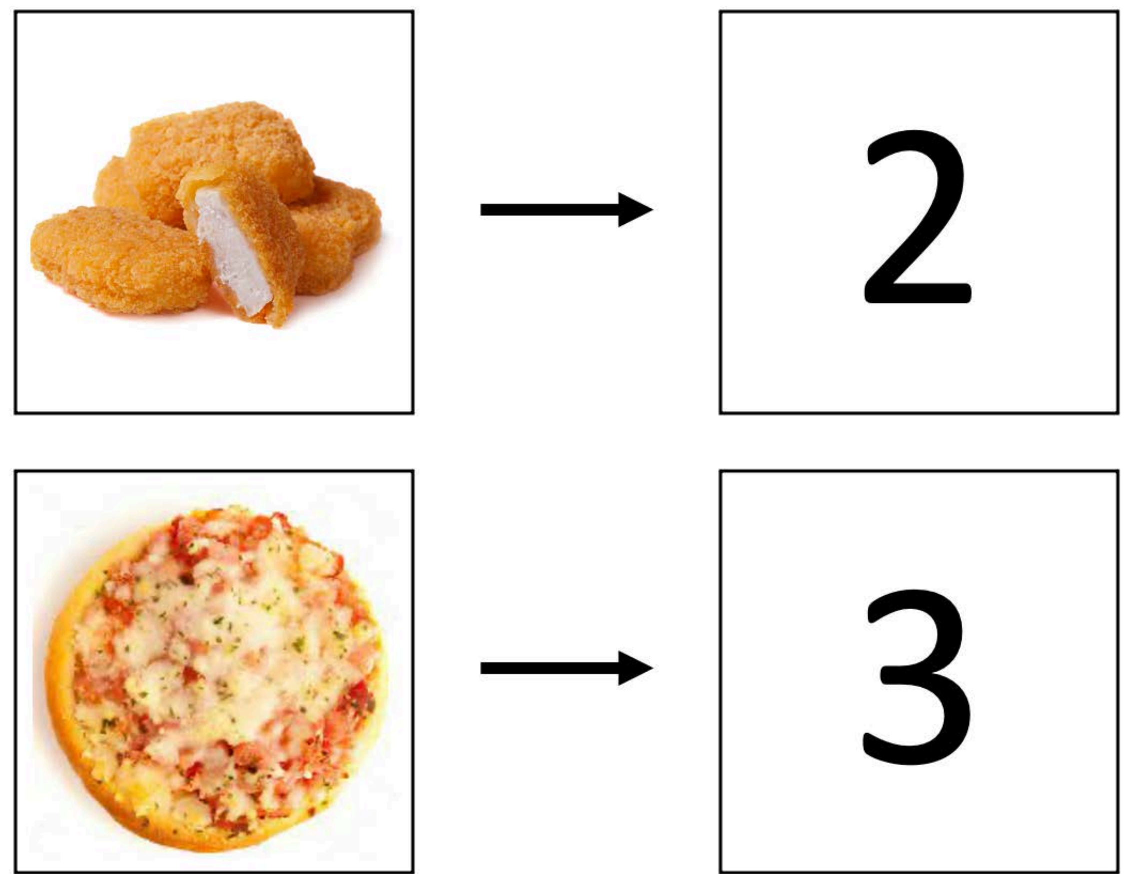
Unplug NutriBullet and
drink smoothie!

QUESTIONS

- Does your person have curly hair?
- Does your person have glasses?
- Does your person have black hair?
- Is your person a boy/man?
- Is your person a girl/woman?
- Does your person have a mustache?
- Is your person bald?
- Does your person have blue eyes?
- Does your person have brown eyes?
- Does your person have a beard?
- Does your person have earrings?
- Does your person have blonde hair?

Visual Support used for Simon

Visual to Set Microwave Timer



Password Visual Found on Computer Keyboard

REVEL2021

Appendix F: Self-Determination Survey – Caregiver Participants

10/28/21

Staff Self-Determination Survey

Name (will be replaced with a number):______
Date: ____

Instructions: These questions ask you to rate the degree to which you have the skills, knowledge, and attitudes that support the self-determination of consumers, as well as how often you use each of these on the job. We are asking you and other staff to complete this form to help us determine the training and support needs of all staff within this organization.

- **Please answer each question as accurately as possible.**
- **If you do not understand a question, answer it as well as you can and note your question(s) in the margin.**
- **If there is a question you do not feel comfortable answering, you may leave it blank.**
- **If there is a question does not apply to you or the organization you work at, you may leave it blank.**

Confidentiality

- **Your answers to these questions will be kept confidential and will be used for research purposes only.**
- **Your answers will not be shared with your supervisor, or anyone else in your organization.**
- **Your answers will not affect your employment with your organization.**

Key Words

- **Self-Determination: Exercising the amount of control you want over things that are personally important**
- **Advocate/Self-advocate: Speaking up for someone or oneself, helping someone achieve their goals or working to achieve one's own goals, or supporting the rights of one's self or another person**
- **Informed Choice: A decision for which the person making the decisions fully understands all of the options available to them, including the consequences and benefits of each option**

A. Job Orientation				
Please rate how well your organization provides an orientation/initial training that prepared you to support consumers' self-determination (*fill in the one circle that best matches your experience*).	**Poor**	**Fair**	**Good**	**Excellent**
1) Providing a job description that clearly defined your role in supporting the self-determination of consumers.	O	O	O	O
2) Clearly explaining your responsibilities in giving consumers opportunities to make choices.	O	O	O	O
3) Providing "on the job" support, as well as classroom training about how to best support the self-determination of consumers.	O	O	O	O

B. Application of Skills				
Please indicate how often you use each of the following skills "on the job" (*fill in the one circle that best matches the frequency of use for each area*).	**Never**	**Rarely**	**Sometimes**	**Frequently**
1) Serving as an advocate for consumers.	O	O	O	O
2) Helping two or more consumers to make decisions together that everyone feels OK with.	O	O	O	O
3) Finding methods of communication for consumers with limited or no verbal ability.	O	O	O	O
4) Making sure consumers understand the options available to them when making a decision.	O	O	O	O
5) Helping consumers create challenging yet realistic goals.	O	O	O	O
6) Supporting consumer's self-determination in the community.	O	O	O	O

C. Staff Training					
Please rate how well the training prepared you for completing each job task or responsibility (*fill in the one circle that best matches your experience).*	**Not at all**	**Somewhat**	**Well**	**Very Well**	**N/A No Training**
1) Serving as an advocate for consumers.	O	O	O	O	O
2) Helping two or more consumers to make decisions together that everyone feels OK with.	O	O	O	O	O
3) Finding methods of communication for consumers with limited or no verbal ability.	O	O	O	O	O
4) Making sure consumers understand the options when making a decision.	O	O	O	O	O
5) Helping consumers create challenging yet realistic goals.	O	O	O	O	O
6) Supporting consumers' self-determination in the community.	O	O	O	O	O

16) I only provide the amount of support to consumers that they desire.	O	O	O	O
17) I encourage consumers to stop and think about the consequences of their decisions before making them.	O	O	O	O
18) I support consumers to identify what they need to do to reach their personal goals.	O	O	O	O
19) I help consumers track their progress towards reaching their personal goals.	O	O	O	O
20) I support consumers to carry out and maintain their cultural traditions.	O	O	O	O

F. Staff Skills				
Please rate your ability in *using each of these skills*. Answer how well you are able to do each of the following:	**Not at all**	**Somewhat Well**	**Well**	**Very Well**
Please rate how well you are able to…				
1) Support each consumer to express personal preferences.	O	O	O	O
2) Recognize that each consumer may need different levels of support in different situations.	O	O	O	O
3) Ask questions of each consumer in a way that helps them to express preferences.	O	O	O	O
4) Point out new opportunities for each consumer to make choices.	O	O	O	O
5) Help each consumer understand the options available to them when making decisions.	O	O	O	O
6) Make sure that my own cultural beliefs are not being imposed on the consumers I support.	O	O	O	O
7) Effectively advocate for consumers.	O	O	O	O
8) Help each consumer create a personal dream for the future.	O	O	O	O
9) Support two or more consumers to make a decision together that everyone is OK with.	O	O	O	O
10) Help each consumer set challenging, but realistic goals.	O	O	O	O
11) Support each consumer in making ***informed*** choices by assuring that they understand all of their options.	O	O	O	O
12) Help consumers think of more than one solution to a problem.	O	O	O	O
13) Recognize when a consumer needs to stop and think about the consequences of a decision before making it.	O	O	O	O
14) Help consumers identify what they need to do to reach a personal goal.	O	O	O	O
15) Help individual consumers track progress toward a personal goal.	O	O	O	O
16) Recognize opportunities for consumers to speak up when their personal rights are being violated.	O	O	O	O
17) Adjust your communication style to make sure that it can be understood by each consumer.	O	O	O	O
18) Make sure that the consumer's voice and preferences are heard and respected at their planning meeting.	O	O	O	O
19) Recognize when a consumer no longer wants to work on an activity or goal.	O	O	O	O
20) Appropriately adjust my interactions with a consumer when their	O	O	O	O

D. Staff Supervision				
Please rate the degree to which you agree with each of the following statements (*fill in the circle that best represents your opinion)*.	**Strongly Disagree**	**Disagree**	**Agree**	**Strongly Agree**
1) My supervisor supports me as I support the self-determination of consumers.	O	O	O	O
2) My supervisor provides me with feedback about how well I support the self-determination of consumers.	O	O	O	O
3) My supervisor gives me praise or recognition when I support the self-determination of consumers.	O	O	O	O

E. Staff Behaviors				
Please rate how often you do the following things at work (*fill in the one circle that best represents if each of these habits of yours*). Answer these questions according to what you usually do at work, not what you would like to do or know how to do.	**Never**	**Rarely**	**Sometimes**	**Frequently**
1) I help consumers speak for themselves and express their own ideas (self-advocate).	O	O	O	O
2) When I know what consumers want, I help them get it.	O	O	O	O
3) I support consumers' decisions to interact with friends who are not staff or family.	O	O	O	O
4) I support opportunities for consumers to make their own decisions about when to make plans with friends.	O	O	O	O
5) I decide how often consumers go out in the community.	O	O	O	O
6) I provide opportunities for consumers to choose the things they want to do in the community.	O	O	O	O
7) I decide the times consumers do things each day (e.g., bath, meals).	O	O	O	O
8) I support consumers in deciding what to do in their free time.	O	O	O	O
9) I involve consumers in making decisions about the appearance of their home.	O	O	O	O
10) I don't touch consumers' things without asking first.	O	O	O	O
11) I don't enter a consumers' bed room without knocking first.	O	O	O	O
12) I provide the same supports to all consumers.	O	O	O	O
13) When I ask consumers to do something and they say "no", I honor their request.	O	O	O	O
14) I chose the time each consumer goes to bed based on how much sleep they need to stay healthy.	O	O	O	O
15) I allow consumers enough time to make their own choices.	O	O	O	O

Appendix G: Social Validity Measures – Caregiver Participants

Acceptability of Intervention Measure (AIM)

	Completel y disagree	Disagre e	Neither agree nor disagree	Agree	Completel y agree
1. Learning how to implement a task analysis via behavior skills training meets my approval.	①	②	③	④	⑤
2. Learning how to implement a task analysis via behavior skills training is appealing to me.	①	②	③	④	⑤
3. I like learning via behavior skills training	①	②	③	④	⑤
4. I welcome learning via behavior skills training.	①	②	③	④	⑤

Intervention Appropriateness Measure (IAM)

	Completely disagree	Disagree	Neither agree nor disagree	Agree	Completely agree
1. Learning how to implement a task analysis via behavior skills training and telehealth seems fitting.	①	②	③	④	⑤
2. Learning via behavior skills training seems suitable.	①	②	③	④	⑤
3. Learning how to implement a task analysis via behavior skills training seems applicable.	①	②	③	④	⑤
4. Learning how to implement a task analysis via behavior skills training seems like a good match.	①	②	③	④	⑤

Feasibility of Intervention Measure (FIM)

	Completel y disagree	Disagre e	Neither agree nor disagree	Agree	Completel y agree
1. Learning how to implement a task analysis via behavior skills training seems implementable.	①	②	③	④	⑤
2. Learning how to implement a task analysis via behavior skills training seems possible.	①	②	③	④	⑤
3. Learning how to implement a task analysis via behavior skills training seems doable.	①	②	③	④	⑤
4. Learning how to implement a task analysis via behavior skills training seems easy to use.	①	②	③	④	⑤

Appendix H: Social Validity Measures – Participants Receiving Services

Acceptability of Intervention Measure (AIM)

1. I liked picking what I learned.

No – I didn't like it at all	No – I didn't like	Neutral – I'm not sure	Yes – I liked it	Yes – I really liked it

2. I liked learning (skill 1).

No – I didn't like it at all	No – I didn't like	Neutral – I'm not sure	Yes – I liked it	Yes – I really liked it

3. I liked learning (skill 2).

No – I didn't like it at all	No – I didn't like	Neutral – I'm not sure	Yes – I liked it	Yes – I really liked it

4. I liked learning (skill 3).

No – I didn’t like it at all	No – I didn’t like	Neutral – I’m not sure	Yes – I liked it	Yes – I really liked it

5. I liked working on my goals with someone on the computer.

No – I didn’t like it at all	No – I didn’t like	Neutral – I’m not sure	Yes – I liked it	Yes – I really liked it

6. I want to pick my own goals in the future.

No – I didn’t like it at all	No – I didn’t like	Neutral – I’m not sure	Yes – I liked it	Yes – I really liked it

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