Evaluating the Effects of Technology-Based Self-Monitoring in Group Homes

By

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# Abstract

Research shows that the quality and frequency of staff-consumer interactions is related to reductions in consumer problem behavior and increases in other desired outcomes, such as self-help, leisure, communication, and community skills (Parsons et al., 1989; Sturmey, 1995). Unfortunately, the frequency with which group-home staff positively interact with consumers is low and regularly the target of intervention (Jerome & Sturmey 2008; Kamana, 2019; Mowery et al., 2010). In the current study, we assessed the effects of a technology-based self-monitoring intervention on staff–consumer interactions during consumer leisure time. Participant data were collected off-site through video recordings from cameras already present in the group homes. In baseline, the percentage of 5-min intervals in which staff positively interacted with consumers was low. Upon introduction of an intervention containing self-monitoring completed via a tablet device, staff interactions increased and maintained when the intervention was in effect. Feedback was provided in addition to self-monitoring for two of the three participants for more robust effects. These findings demonstrate the utility of technology-based interventions to increase staff's positive interactions with consumers in group homes.

## Acknowledgments

This project was made possible by the numerous people I have the good fortune to know. God has favored me in these relationships, and for that I must express my deepest gratitude.

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visits. We will just have to persuade Elon Musk to come up with a way to travel at light speed so we can visit in-person more frequently.

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**Evaluating the Effects of Technology-Based Self-Monitoring in Group Homes**

Behavior analysis is an approach to understanding the behavior of organisms with three subdisciplines: conceptual and theoretical foundations (Johnston, 2014; Skinner, 1974), the experimental analysis of behavior (Sidman, 1960), and applied behavior analysis (Baer et al., 1968). What began as an experimental science expanded to include conceptual and applied subdisciplines that attempt to describe, predict, and control the behavior of various species. The experimental analysis of behavior establishes controlled environments in the laboratory to investigate basic behavioral principles and processes (Skinner, 1938). Conceptual and theoretical foundations address the underlying assumptions made within a science (e.g., empiricism, determinism, pragmatism; Johnston, 2014; Skinner, 1974). Applied behavior analysis (ABA) applies behavioral principles to socially significant behaviors (Baer et al., 1968). Derived from these branches is a practice guided by science where practitioners implement empirically supported procedures in applied settings.

Applied behavior analytic interventions have the potential to produce meaningful behavior change across all settings where people spend their time. One critical area of focus is on studying socially significant behaviors in the workplace. On average, full-time employees spend 8.5 hours each day at work (Bureau of Labor Statistics, 2019), which comprise approximately 55% of their waking hours. In addition, 51% of workers in the US report they are only somewhat satisfied with their jobs (Society for Human Resource Management, 2017), which can profoundly impact their professional and personal lives. Longitudinal studies and meta-analytic reviews have documented that job satisfaction is correlated with employee mental and physical health (Faragher et al., 2005). Thus, ensuring employees have the supports to perform their job

competently and are satisfied with their work environment is a worthwhile and socially relevant area of study.

Organizational behavior management (OBM) is a subdiscipline of ABA in which behavior analytic principles are applied to the behavior of individuals and groups in organizations to create socially significant change (Austin, 2000). Three branches comprise OBM: behavior-based safety, behavioral systems analysis, and performance management. Behavior-based safety focuses on adjusting the environment to foster safe employee behavior (Wilder & Sigurdsson, 2015). Behavioral systems analysis focuses on improving individual performance, processes, and organizational systems using behavior analysis and systems analysis (Ludwig, 2015; Sigurdsson & McGee, 2015). Performance management uses a staff-level approach to increase desired and decrease undesired workplace behavior (Daniels & Bailey, 2014) by assessing the environmental variables—antecedents and consequences—influencing behavior.

Antecedents are stimuli that precede behavior and may include discriminative stimuli (e.g., signal that a consequence will occur) and motivating operations (i.e., alter the value or effectiveness of a consequence and alters the frequency of the behavior that has previously obtained that consequence; Michael, 1993). Antecedents have the potential to influence behavior and can be a powerful behavior-change technique with employees. For example, Deliperi and colleagues (2015) evaluated an antecedent intervention, video modeling with voiceover instruction, on staffs implementation of a paired-stimulus preference assessment. The video model consisted of a pre-recorded video of an explanation of each step, a model, and highlights of different aspects of the video. All participants successfully implemented, scored, and interpreted the results of the preference assessment after completing the antecedent training

without any programmed consequences. Common antecedents in the workplace include training, instructions, and prompting which comprise 53% of independent variables in the experiments published in the *Journal of Organizational Behavior Management* between 1998 and 2009 (VanSteele et al., 2012). Given their popularity and effectiveness in increasing desired behavior, understanding how antecedents influence workplace behavior is an important area of study.

Consequences are another critical component of performance management. Consequences include the presentation or removal of stimuli after a behavior has occurred and increase or decrease the future probability of that behavior (Catania, 2013). Reinforcement, for example, increases the future probability of a behavior and involves the presentation (positive reinforcer) or removal (negative reinforcer) of stimuli. Punishment decreases the future probability of a behavior and also involves the presentation (positive punisher) or removal (negative punisher) of stimuli. Common workplace consequences include feedback, monetary incentives, non-monetary incentives, praise, termination, and disciplinary action (VanSteele et al., 2012). For example, Cook and Dixon (2006) compared the effects of three different consequent interventions—verbal feedback, comparative graphic feedback, and comparative graphic feedback plus a lottery system—on form completion of group-home staff serving individuals with developmental disabilities. Verbal feedback consisted of weekly meetings with the researcher and staff regarding participant's percentage of completed forms. Comparative graphic feedback consisted of a weekly anonymous graphic display of each staff's form completion. The comparative graphic feedback and lottery system consisted of the verbal and graphic feedback with an additional lottery system; the staff with the highest score received three lottery tickets, the staff with the second highest score received two tickets, and the staff with the lowest score received one ticket. At the end of the week, the winner of the lottery received a

$50.00 cash prize. Although the percentages of form completion improved in each condition relative to baseline, the highest levels were observed in the condition with the lottery system. These and other studies document the popularity and effectiveness of performance management interventions involving consequences, such as feedback (Gravina et al., 2018) and incentives (e.g., Luiselli et al., 2009).

**Performance Management in Human Service Settings**

Early OBM research was first published in the 1960s, and the field's flagship journal, *Journal of Organizational Behavior Management*, published its first issue in 1977. The field was recognized as an established discipline in the 1980s (Dickinson, 2001). Despite this rich history, a recent review revealed few published articles feature research conducted in human service settings (Gravina et al., 2018). Dennis Reid and colleagues have an extensive line of research dating back to the 1980s assessing staff management and supervision procedures in human service settings (e.g., Reid & Whitman, 1983; Reid et al., 2012). Reid et al. have evaluated a range of topics including staff training, motivation, and staff satisfaction. Additional researchers have evaluated workplace interventions focused on human service settings (e.g., Strouse et al., 2004; Catania et al., 2009; Luiselli et al., 2009). For example, in group homes serving adults with developmental disabilities, Strouse and colleagues (2004) evaluated the effects of a revised staff-scheduling system on staff longevity (e.g., turnover, position vacancies), costs, and acceptability. Across numerous studies, Dixon and colleagues evaluated the effects of various antecedent and consequent interventions on workplace performance (e.g., Belisle et al., 2016; Guercio & Dixon, 2010).

The cumulative number of publications involving performance management in human service settings has been steadily increasing since the start of the 21st century (Gravina et al.,

2018). The past 5 years, in particular, has seen a growing interest in the development and use of performance management interventions in human service settings (Cicoria, 2016). The reasons for this increase are varied, but primarily reflect the growing numbers of credentialed behavior technicians and simultaneous growth in service settings largely driven by insurance billing for autism services (Carr & Nosik, 2017; Deochand & Fuqua, 2016). Now, perhaps more than ever, organizational leaders appreciate the need for high-quality staff training and support procedures to foster quality services (Dixon et al., 2016). To address this need, the Performance Diagnostic Checklist-Human Services (PDC-HS; Carr et al., 2013) was recently developed to identify barriers to staff performance in human service settings. Research has shown that this instrument is a valid assessment to inform appropriate performance management interventions for human service staff. Common performance management interventions in human service settings include staff training, coaching, feedback, and pay-for-performance programs (Gravina et al., 2018). Collectively, recent trends show the importance of adopting a behavior analytic approach to managing the performance of human service staff.

Human service settings present unique challenges compared to other businesses and business models. For instance, it is common for human service settings to have high levels of staff turnover (Kazemi et al., 2015). In fact, the average annual direct support professional turnover rate is 45% (range, 18% - 76%; President's Committee for People with Intellectual Disabilities, 2017). High turnover is problematic because training is expensive and there is a growing demand for services (President's Committee for People with Intellectual Disabilities, 2017). Another challenge for human service settings is that rates are set by funders and may not cover the costs to deliver needed services; thus, this service model may lead to fewer dollars to pay staff, poor access to health insurance, and lack of paid time off for direct support

professionals (President's Committee for People with Intellectual Disabilities, 2017). As a result, there is a need to create and evaluate effective, efficient, and acceptable interventions in human service settings in an attempt to save resources and retain staff (Parsons et al., 2012). Ideally, research will target and identify ways to support staff and consumers in organizations while considering these challenges.

Organizational leaders have numerous options when developing resource-sensitive staff training and staff support procedures. Research supports the use of video modeling or computer-based instruction when initially training staff to perform their job responsibilities (Catania et al., 2009; Deliperi et al., 2015). When designing incentive programs, leaders can use low- or no-cost reinforcers to reward desired performance (Wine et al., 2013). For example, removing aversive stimuli, using performance lotteries, and providing praise have all been used as reinforcers in published studies (e.g., Green et al., 2008; Iwata et al., 1976; Codding et al., 2005). Another option involves training staff to self-monitor their own behavior. Self-monitoring is of particular interest as staff implement the intervention themselves without using additional resources such as supervisor time.

**Self-Monitoring**

Self-monitoring is an antecedent intervention that may be appealing to organizational leaders responsible for ongoing performance management of staff. Self-monitoring refers to an individual observing and recording the occurrence or nonoccurrence of their own behavior (Olson & Winchester, 2008). Advantages of using self-monitoring in the workplace include its practicality, adaptability, and efficiency. Self-monitoring is practical as it can be easily implemented in busy settings. Additionally, self-monitoring interventions are adaptable as they can be used to track a variety of behaviors while being adjustable to staff's schedule. Lastly, self-

monitoring is time efficient because staff implement the intervention to record their own behavior (rather than relying on a supervisor to perform an observation). For these reasons, self-monitoring can be a useful intervention for staff in human service settings.

Self-monitoring has been implemented across various workplace settings (e.g., swim complex, sandwich shop) and employees (e.g., teachers, individuals with intellectual and developmental disabilities) and with a range of treatment packages (e.g., the inclusion of prompts, feedback, goal setting), recording modalities (e.g., paper and pen, golf clicker, or technology), and purposes (e.g., schedule adherence, smoking cessation; Olson & Winchester, 2008). Research has generally shown that self-monitoring is a flexible and functional way to increase safety and productivity in workplaces (Olson & Winchester, 2008).

Self-monitoring has also been used with employees working in human service settings. For example, Petscher and Bailey (2006) used a multiple baseline design across participants and behaviors to evaluate a treatment package consisting of self-monitoring, a tactile prompt, and feedback on token economy implementation by teachers working with students with disabilities. The self-monitoring package effectively increased accurate token economy implementation. Similarly, video self-monitoring increased the accuracy with which staff implemented discrete trial instruction with children with autism (Belfiore et al., 2008). The effects maintained for up to four weeks. Both studies provide support for adopting practical and time-efficient interventions, such as self-monitoring, when coaching staff.

Research involving staff self-monitoring interventions in group homes has been studied across a variety of staff behaviors, such as custodial work and staff-staff interactions (Burg et al., 1979) and the proportion of hours spent in direct client contact (Calpin et al., 1988). Richman et al. (1988) measured staff's on-task behavior and schedule adherence using a multiple baseline

design across group homes. Results showed self-monitoring and self-monitoring plus feedback increased both schedule adherence and on-task behavior for staff working in both group homes. Doerner et al. (1989) measured positive interactions between staff and consumers using a multiple baseline design across two group homes. The intervention package consisted of self-monitoring, goal setting, self-evaluation, and self-praise. Desirable staff behaviors increased during intervention, which is consistent with the results of Richman et al. (1988). These findings are especially promising because some staff behaviors, such as engaging in positive interactions with consumers, are correlated with decreases in consumer problem behavior (Burg et al., 1979; Baldwin & Hattersley, 1984). Additionally, research has shown that staff who are more familiar with consumers in group homes have increased compliance with tasks compared to unfamiliar staff (Parsons et al., 2016). Therefore, targeting the frequency and/or quality of interactions staff have with consumers is worthwhile as these interactions may decrease consumer problem behavior and increase compliance.

Group-home self-monitoring research has also demonstrated the effectiveness of varied materials to self-monitor such as golf clickers (Doerner et al., 1989) or clipboards with removeable stickers (Burg et al., 1979; Baldwin & Hattersley, 1984). While promising, advances in technology in recent decades necessitate additional research investigating the efficacy of technological self-monitoring interventions on the behavior of staff working in group homes. For example, many organizations have transitioned to electronic data recording rather than using a paper data sheet (Sleeper et al., 2017). Leveraging the technology already available in organizations makes a technology-based self-monitoring intervention potentially more feasible.

A limitation of existing self-monitoring research within group home settings is that nearly all studies include intervention packages (Burg et al., 1979; Burgio et al., 1983; Doerner et al.,

1989; Parsons et al., 1989) and rarely evaluate the effects of self-monitoring in isolation (with one exception; Richman et al., 1988). For example, Parsons et al. (1989) evaluated self-monitoring with increased program structure and training. Burg et al. (1979) used self-monitoring in addition to supervision. Although the results from Parsons et al. and Burg et al. showed improvements in participant performance, it is unknown to what extent self-monitoring contributed to these improvements. Evaluating the effects of self-monitoring in isolation and incorporating additional performance management interventions, such as feedback, only if necessary, addresses this limitation and has the potential to aid organizational leaders in adopting resource-efficient procedures.

**Purpose**

Although self-monitoring has effectively improved performance of staff working in group home settings, all but one study (Richman et al., 1988) has evaluated self-monitoring as part of a packaged performance management intervention. Packaged interventions are not ideal for human service settings given the need to develop effective interventions with as few resources as possible. Moreover, self-monitoring research, to date, has not included advances in technology as other aspects of the job of human service staff have evolved over time (e.g., electronic data collection). Given the literature documenting the beneficial outcomes associated with staff positively interacting with consumers living in group homes (e.g., Burg et al., 1979; Parsons et al., 1989; Sturmey, 1995), additional research evaluating ways to foster these interactions is worthwhile. Therefore, the purpose of the current study is to evaluate a technology-based self-monitoring intervention on staff–consumer interactions in group homes.

**Method**

**Participants and Setting**

Approval from the university's Institutional Review Board and the organization's Human Rights Committee was obtained before starting the experiment. Participants included two female and one male staff each working in different group homes for adults with intellectual and developmental disabilities. Sierra was a 49-year-old female with an associate's degree who worked at the organization as a home supervisor for almost a year. Billie was a 27-year-old female with some college who worked at the organization as a direct support professional for almost two years. Carson was a 23-year-old male with some college who worked at the organization as a direct support professional for almost one year. The setting consisted of three different three-bed, one-bath townhomes with a kitchen, dining room, living room, hallway, and fenced-in outdoor area. Homes had built-in cameras with continuous video and audio recording capabilities in the public areas of the homes. Recordings could be viewed at the organization's office suites as shown in Appendix A.

Upon hire, participants experienced a 5-day pre-service workshop where they were informed of job responsibilities including the organization's expectations for how to implement various practices to prevent problem behavior and enhance the quality-of-life of consumers. An hour-long presentation focused on describing and modeling several research-supported practices to help participants meet this agency expectation. One of these practices included initiating positive interactions with consumers. In this training, participants received information about the rationale for positive interactions (i.e., positive interactions promote healthy relationships, decrease problem behavior, and increase appropriate behavior) and that they should interact at least once every 5 min per consumer.

Participant recruitment occurred via supervisor recommendation (Appendix B). As the experimenter, I contacted recommended staff through text message on their work phone with a brief explanation of the study. Staff who tentatively agreed to participate in the study met with the experimenter to sign the consent form (Appendix C), fill out a demographic questionnaire (Appendix D), and review their job responsibilities pertaining to interacting with consumers. The experimenter informed participants that observations began on the day of consent, would occur during evening leisure time, and would be conducted remotely via the cameras in the home. Because observations required participants to be in the home and consumer and staff schedules varied, observations depended on availability and participant assent[1]. At most, one observation (i.e., session) was possible each day participants worked. Upon completion of the study, participants were paid $50.00 via ClinCard.

**Materials**

Participants received a Samsung Tab A6, a charger, and laminated written instructions. The Samsung Tab A6 had two pre-installed applications, Countee and an interval timer. Laminated instructions included the tablet password, the experimenter's contact information, examples of positive interactions, and a task analysis for the applications (Appendix E). Appendices F and G contain screen shots of both applications.

**Data Collection and Response Measurement**

All observations were recorded via in-home cameras and microphones and saved to a secure organization network. They occurred during evening leisure activities and were not conducted during meals or medicine administration lasting longer than 10 min.

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[1] At the beginning of each session, I text messaged participants to confirm they would be in the home and were available to self-monitor.

*Primary Dependent Variables*

The primary dependent variable was the percentage of 5-min intervals with a positive interaction. It was measured using 5-min partial interval recording during a 30-min session. The employer required employees to engage in positive interactions with consumers at least once every 5 min; thus, the measurement system adopted in this experiment reflected that criterion. A positive interaction was defined as a participant engaging with a consumer by giving a compliment, having a conversation, greeting the consumer, providing appropriate physical interaction (i.e. high five), providing an expression of care, or praising consumer behavior (Kamana, 2019). A positive interaction was scored regardless of a consumer's response (e.g., a participant greeted a consumer, but the consumer did not reply) or who initiated the interaction (e.g., a participant replied to a consumer-initiated interaction for any duration). An interaction ended after 2 s without verbal or physical contact. Table 1 provides illustrative examples of positive interactions. A positive interaction did not include participants teaching individualized programs, implementing procedures from a behavior plan, or giving redirection statements. If a participant was absent for three or more 1-min intervals within a 5-min interval, the data from that interval were excluded for that session. The percentage of 5-min intervals with a positive interaction was calculated by dividing the total number of intervals with a positive interaction by the total number of intervals, multiplied by 100.

*Secondary Dependent Variables*

The secondary dependent variables included the aggregate number of positive interactions by minute, the percentage of 1-min intervals with a positive interaction, and participant recording accuracy. The purpose of summarizing the aggregate number of positive interactions by minute was to determine if an audible beep at the end of each interval prompted

participants to self-monitor or acted as a reminder to interact. To conduct this analysis, I summed the frequency of self-recorded interactions in the first, second, third, fourth, and fifth minutes for each interval. The purpose of calculating the percentage of 1-min intervals with a positive interaction was to determine if interactions happened more than once in each 5-min interval (i.e., if participants met or exceeded the agency standard). To conduct this analysis, I summarized the mean percentage of 1-min intervals for the last three data points for each phase for each participant.

The purpose of calculating participant accuracy was to determine if participants accurately self-recorded their behavior. To determine accuracy, experimenter observation data were compared to participant output data. An accurate response occurred when the experimenter and participant recorded the same response within the last 30 s (±15 s) of each 5-min interval. I permitted a ±15 s buffer period because I instructed participants to do their best recording interactions every 5 min, but that other household and clinical needs may take priority temporarily. Thus, this brief window recognized that participants might not record at the exact end of the interval. An error of omission occurred when the experimenter recorded that a positive interaction occurred, but the participant recorded that a positive interaction did not occur or did not record any interaction. An error of commission occurred when the experimenter recorded a positive interaction did not occur, but the participant recorded a positive interaction occurred. The percentage of accurate responses was calculated by dividing the total number of accurate responses by the total number of 5-min intervals, multiplied by 100. The percentage of omission errors was calculated by dividing the total number of omission errors by the total number of 5-min intervals, multiplied by 100. The percentage of commission errors was calculated by

dividing the total number of commission errors by the total number of 5-min intervals, multiplied by 100.

**Interobserver Agreement (IOA)**

An independent, second observer recorded data on participant's positive interactions for a minimum of 30% of sessions for each condition and participant to calculate interobserver agreement. For agreement to occur, both observers must have recorded that an interaction did or did not occur in each 1-min interval[2]. Agreement was calculated using the interval-by-interval method by dividing the number of intervals with agreement by the total number of intervals, multiplied by 100. Mean agreement for Sierra was 91.9% (range, 86.7%–100%), for Billie was 89.6% (range, 80%–100%), and for Carson was 89.6% (range, 80%–96.7%).

**Procedure**

A nonconcurrent multiple baseline design across participants was used to evaluate the effects of self-monitoring on staff–consumer positive interactions for Billie and Carson. An ABAB design was used for Sierra. The analysis consisted of baseline, self-monitoring, and self-monitoring plus feedback, if needed.

*Baseline*

During baseline, participants performed their job responsibilities as they typically would. Participants were reminded that interactions with consumers should occur at least once every 5 min when they provided informed consent. They did not receive experimenter feedback about their performance or have access to the tablet during baseline. This phase continued until participant behavior data were stable or decreasing based upon visual inspection.

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[2] Although the primary dependent measure involved 5-min intervals, data collectors scored behavior in 1-min intervals. Thus, the agreement percentages were calculated using 1-min intervals.

*Self-Monitoring*

  The purpose of this phase was to evaluate the effects of self-monitoring on the percentage of intervals staff engaged in positive interactions with consumers. To train participants how to self-monitor, I used an evidence-based training procedure, behavioral skills training (Parsons et al., 2012), that includes instructions, modeling, practice, and feedback. Training was conducted in one session lasting no more than 40 min. Participants received both written and vocal instructions for a positive interaction, which included exemplars and non-exemplars. Participants also received written and vocal instructions on how to use the tablet, start the applications, and send the data to the researcher via encrypted email. After providing instructions, I modeled how to use the tablet, start the applications, and send the data. Participants then had the opportunity to imitate the model. I answered questions and provided corrective feedback (e.g., "Remember to press start on the interval timer.") and/or praise (e.g., "Great job double-checking the session name.") until the participant independently set up a self-monitoring session on the tablet. Once participants were able to start the session independently, they rehearsed two 5-min intervals and recorded the presence or absence of positive interactions. I provided corrective feedback if participants made an error and praise for accurate self-monitoring.

  More specifically, the training instructed participants to start a self-monitoring session by opening both the interval timer and Countee apps. Participants used the Countee app to record their interactions every 5 min (i.e., self-monitor). Participants started a new session by clicking the button labeled "start new session" and labeled the session with that day's date. They would then switch to the interval timer app and press the play button to begin the timer. The interval timer had three audible beeps that sounded before the interval began. During the three audible beeps, participants would switch to the Countee app and press the "start" button. After 30 min,

the interval timer stopped and the Countee app closed. Data were automatically saved within the Countee app. Participants were also trained to send their data to the researchers through secure email by pressing the share data icon (airplane icon in the top right corner of the Countee app), selecting that day's data set, typing in the correct email address, and then pressing send.

Once training was complete and self-monitoring began, I contacted participants each workday morning via text message to confirm self-monitoring could be scheduled that evening and to obtain participant assent. Approximately 5 min before the start of each session, I sent a reminder text message. During this phase, participants did not receive feedback about performance. This phase continued until participant data maintained at or above the criterion of 80% or higher across several sessions (study ended), or participant data were stable or decreasing upon visual inspection (moved to next phase).

*Self-Monitoring and Feedback*

The purpose of this phase was to evaluate the effects of both self-monitoring and feedback on the percentage of intervals staff positively interacted with consumers. Feedback included a text message that contained their previous session's percentage. In addition, if participants reached or surpassed 80%, the text message contained a praise statement (e.g., "Fantastic job interacting with consumers"). If participants did not reach 80%, they were reminded that their percentage should be at or above 80% and were asked if they needed additional information or help. None of the participants asked follow-up questions or needed additional information. This phase continued until participant data maintained at or above 80% for three consecutive sessions.

**Training Integrity**

An independent observer reviewed 100% of the self-monitoring training sessions off-site at the organization's office suite and collected data on experimenter training integrity. To measure training integrity, the observer completed a checklist of training activities that included instructions, modeling, rehearsal, and feedback for each self-monitoring step (Appendix H). Training integrity was calculated by dividing the number of correctly implemented steps by the total number of steps, multiplied by 100. Training integrity ranged from 96% – 100%.

**Social Validity**

Upon completion of the study, participants had the opportunity to fill out an anonymous social validity questionnaire that could be returned via postal service (Appendix I). The questionnaire was a modified version of the Intervention Rating Profile-15 (IRP-15; Martens et al., 1985) that consisted of 11 items asking participants to rate the acceptability of the self-monitoring training and self-monitoring intervention on a six-point Likert-type scale where 1 indicated strongly disagree and 6 indicated strongly agree. Higher scores represent higher acceptability. Other questions included one yes or no question that asked if participants used self-monitoring outside of the research study and one open-ended question that asked for additional comments.

## Results

**5-Min Intervals**

Figure 1 depicts the percentage of 5-min intervals with a positive interaction for each participant (primary y-axis), and the total number of interactions across each minute (secondary y-axis). The percentages for all participants are variable, low, and decreasing during baseline. Specifically, the data for Sierra ($M = 40\%$; range, 16.7%–66.7%), Billie ($M = 22.2\%$; range, 5%–

50%), and Carson ($M = 38.6\%$; range, 0%–100%) are below the agency's criterion of one interaction every 5 min.

Upon the introduction of self-monitoring, Sierra's behavior immediately increased and maintained above the 80% criterion for 8 of 10 consecutive sessions ($M = 84.5\%$; range, 50%–100%). When self-monitoring was discontinued, the percentage of intervals in which Sierra engaged in a positive interaction decreased to baseline levels by the end of this phase ($M = 60.7\%$; range, 16.7%–100%). High levels of responding were observed upon reintroduction of self-monitoring ($M = 87.8\%$; range, 80%–100%).

Billie and Carson showed initial increases in behavior at the start of self-monitoring, but performance did not maintain. Both Billie's ($M = 67.3\%$; range, 33.3%–100%) and Carson's ($M = 65\%$; range, 25%–100%) performance was well below the agency criterion. With the addition of feedback, performance increased to criterion levels (Billie $M = 83.3\%$; range, 66.7%–100%; Carson $M = 95\%$; range, 80%–100%).

The heat map, also shown in Figure 1 (secondary y-axis), depicts the number of interactions that occur by minute. Darker shading indicates a higher frequency of positive interactions. Lighter shading indicates a lower frequency of positive interactions. The purpose of summarizing the aggregate number of positive interactions by minute was to determine if the audible beep prompted participants to self-monitor or acted as a reminder to interact. Results show that interactions occurred across each minute of the 5-min interval for most sessions. However, there are minutes in which interactions never occurred. These data suggest that the beep did not function as a prompt to interact with consumers.

**1- Min Intervals**

A secondary dependent variable was the percentage of 1-min intervals with a positive interaction. The purpose of this analysis was to determine if participants met or exceeded the agency criterion. Figure 2 summarizes the mean percentage of 1-min intervals for the last three data points for each phase for each participant. If an employee were to meet the agency standard by minimally interacting one time only every 5 min, the value depicted in the figure would equal 20%. Overall, percentages were below 20% in baseline for all participants. These data indicate that participants were performing below the agency standard. During self-monitoring, the percentage of 1-min intervals with positive interactions was above criterion for all participants. With the addition of feedback for Billie and Carson, the percentage of 1-min intervals further increased.

**Accuracy**

Table 2 shows the results of participant self-monitoring accuracy. Accuracy varied by participant as did errors of omission and commission. Sierra's accuracy averaged 49.4% with a similar percentage of omission errors and few commission errors (1.2%). Billie's accuracy averaged 21.0% with a high percentage of omission errors 71.0% and relatively few commission errors (8.0%). Carson's accuracy was higher than other participants averaging 67.9% with relatively few omission errors (9.9%) and commission errors averaging 22.2%.

**Social Validity**

I distributed the social validity questionnaire to all participants. Only one participant returned a completed questionnaire. These results are shown in Table 3. All questions were answered with an agree (5) or strongly agree (6) with an overall mean of 5.85 indicating high intervention acceptability. The participant indicated strong agreement with a statement that self-

monitoring is an acceptable way to increase interactions between staff and consumers and a statement that they liked the procedures used to train self-monitoring. Moreover, this participant indicated strong agreement with a statement that they liked using self-monitoring to increase interactions with consumers. Overall, this participant found the self-monitoring intervention to be acceptable.

## Discussion

The purpose of the present study was to evaluate the effects of a technology-based self-monitoring intervention on staff–consumer interactions in group homes. Results show that technology-based self-monitoring produced increases in the percentage of intervals with positive interactions between three participating staff and consumers. One participant reached criterion levels of performance with the self-monitoring intervention whereas two participants required feedback to reach criterion. Moreover, supplemental analysis of responding during 1-min intervals reveals that participants exceeded the agency criterion during self-monitoring. These data are similar to the findings of previous studies and support the use of self-monitoring intervention packages to achieve and maintain desired employee performance (Baldwin & Hattersley, 1984; Burg et al., 1979; Richman et al., 1988).

The study also measured when participants interacted, participant self-monitoring accuracy, and the acceptability of the intervention. Data from Figure 1 show that participants varied the minute at which they interacted in each 5-min interval. Previous research has not assessed temporal patterns of responding, so participant interactions may have occurred at the beginning, middle, or end of a session. Thus, these data are novel and suggest that staff may space their interactions throughout an interval rather than demonstrating a scalloped pattern of responding (e.g., waiting until the end of the interval to interact). Interestingly, I did not instruct

participants to avoid scalloping, and these data suggest it may be unnecessary to do so. Previous

research has documented that human service staff demonstrate scalloped patterns of responding

for some job tasks (e.g., conducting observations; Reed et al., 2010). Although research is

lacking indicating a scalloped pattern of positive interactions with consumers is problematic,

ideally staff interactions would occur at various times and as natural social opportunities present

themselves.

        The findings from the present study also show participants did not have high levels of

self-monitoring accuracy. These results differ from previous research where participants

demonstrated high accuracy. For example, Burgio et al. (1983) found group home staff

accurately self-monitored and graphed their interactions. The present findings are promising

because they suggest that self-monitoring will produce desired behavior change despite errors in

staff recording. Future research should examine this issue more closely because these findings

are tentative.

        Lastly, results of the social validity survey show technology-based self-monitoring had

high acceptability for the one participant who completed the survey. Of the 6 studies evaluating

ways to foster staff-consumer interactions, only two asked participants to rate the acceptability of

the intervention (i.e., Burgio et al., 1983; Mowery et al., 2010). Social validity should be

evaluated because an intervention's long-term implementation may depend on staff and

consumer acceptability (Parsons et al., 2012). For example, Wolf et al. (1995) discuss how a

group home model for youth with problem behavior would have shut down had social validity

measures not been developed to improve the model. Future self-monitoring research should

continue to evaluate the acceptability of self-monitoring procedures to ensure that it is an

acceptable intervention.

**Contributions to the Literature**

Results of the current study contribute to the literature in several ways. First, the results contribute to the limited research identifying ways to promote positive staff–consumer interactions in group homes. Although research has shown that the quality and frequency of positive interactions influence consumer outcomes (e.g., Parsons et al., 1989; Sturmey, 1995), only a handful of studies have addressed how to increase positive interactions (Burg et al., 1979; Burgio et al., 1983; Baldwin & Hattersley, 1984; Doerner et al., 1989; Kamana, 2019; Mowery et al., 2010). For example, Doerner et al. (1989) showed a self-management package (containing self-monitoring, goal setting, self-evaluation, and self-praise) increased the frequency of positive interactions between staff and consumers. Other researchers have improved positive interactions between staff and consumers with consultant training and feedback (Kamana, 2019), treatment packages using self-monitoring, standard setting, self-evaluation, and self-reinforcement (Burgio et al., 1983), and self-monitoring in addition to supervision (Burg et al., 1979). The present findings contribute to this small body of literature and support the beneficial effects of self-monitoring with and without feedback.

The results of this study also contribute to the self-monitoring literature in two ways. First, this study adopted technology to assist participants with self-monitoring, which reflects recent trends with using technology in human service settings (LeBlanc et al., 2020). Previous self-monitoring research in group homes relied on golf clickers (Doerner et al., 1989) and paper and pen (Olson & Winchester, 2008), which were effective but may be outdated. Quite possibly, asking human service staff to self-monitor using techniques (e.g., paper, golf clickers) that differ from how they perform their job responsibilities (e.g., electronic data recording) may introduce barriers to self-monitoring. Because incorporating technology into service-delivery settings is

gaining popularity (e.g., DiGennaro Reed & Reed, 2013), evaluating technology-based

interventions is a worthwhile endeavor.

A second contribution to the self-monitoring literature includes the evaluation of self-

monitoring as a single intervention. Previous research used interventions containing two to four

components and did not evaluate the effects of self-monitoring alone (e.g., Burg et al., 1979;

Burgio et al., 1983; Calpin et al., 1988; Doerner et al., 1989; Mowery et al., 2010; Parsons et al.,

1989). Evaluating packaged interventions makes it difficult to determine if all components are

necessary without conducting a component analysis. Some components may be unnecessary to

produce desired behavior change and, as a result, may waste precious resources. The current

study evaluated the effects of self-monitoring alone and incorporated additional components

(experimenter feedback delivered via text message) only if needed. This sequential approach has

precedence in the literature (e.g., Erath et al., 2020; Howard & DiGennaro Reed, 2014) and was

intentionally designed to ensure careful use of resources. One participant met criterion with self-

monitoring alone. Two participants showed improved performance with self-monitoring but

required feedback to reach criterion levels. These data suggest that, under certain circumstances

and for some individuals, self-monitoring alone may yield desired outcomes. Future research

should investigate these variables further to aid in the design of resource-efficient interventions.

This study also contributes to the feedback literature. Feedback is a common performance

management intervention as it can be relatively inexpensive to administer and is effective (e.g.,

Sleiman et al., 2020). Despite its popularity, I am unaware of any research that has evaluated

text-message feedback on the performance of staff working in group homes. I selected this form

of feedback because of its potential advantages. If the organization adopted it, text-message

feedback would be cost effective for supervisors to implement. Group-home supervisors

regularly travel to the program to conduct observations, give feedback, and ensure a presence within the program, which takes valuable personnel time and involves mileage reimbursement. The delivery of feedback via text message could help reduce the response effort associated with giving in-person feedback or delivering feedback via video or telephone conferencing. These latter forms of feedback require both the supervisor and supervisee to be available at the same time. Another advantage is that text-message feedback did not require additional training and was quick to deliver. Additionally, feedback was delayed relative to when the participant performed the behavior and yet was still effective. Feedback is generally recommended to be provided immediately (i.e. within 60 s) after the behavior is performed (Goomas & Ludwig, 2008; Luke & Alavosius, 2011; Sleiman et al., 2020), but results of the current study show delayed feedback can still improve performance. Overall, the use of text-message feedback in addition to self-monitoring assisted participants in achieving and surpassing organizational criterion while being easy and efficient to implement. Because text-message feedback is not a well-established performance management intervention, future researchers should evaluate its efficacy further.

The finding that the behavior of participants improved despite inaccurate self-monitoring is another important contribution. Previous studies demonstrated socially significant improvements in target behaviors when participants implemented self-monitoring with higher accuracy (Gravina et al., 2013; Sasson & Austin, 2004). It may not always be feasible for staff to implement self-monitoring with high levels of accuracy in human service settings given competing responsibilities, such as implementing teaching programs and behavior intervention plans or assisting with self-care skills. Thus, determining that the intervention may produce robust changes in behavior despite lower self-monitoring accuracy is important. Other behavioral

interventions have had similar outcomes. For example, the good behavior game, a classroom management technique that uses group contingencies to reduce disruptive behavior and increase on-task behavior, has been shown to be effective in reducing disruptive behavior while being implemented with low integrity (Joslyn & Vollmer, 2020). Thus, it is possible that self-monitoring may improve behavior even when implemented with low accuracy. The present finding is preliminary and, thus, additional research is necessary before firm conclusions for the applied setting can be made.

**Behavioral Mechanisms of Self-Monitoring**

Several studies have discussed the putative functions of self-monitoring (e.g., Burgio et al., 1983; Olson & Austin, 2001; Olson & Winchester, 2008, for a review). For example, Olson and Austin (2001) propose that self-monitoring may function as an antecedent, consequence, and rule generator (i.e., contingency-specifying and function-altering stimulus). In the present study, it is possible that aspects of the self-monitoring intervention included all these functions.

With respect to antecedents, the interval timer beep may have prompted self-monitoring behaviors, which was by design. The data supporting this function are lacking in the current study, but this was the intended function of the beep. One way to determine if the beep functioned as a prompt is to fade this component of the intervention and measure whether participants continue to record their behavior. The act of recording one's behavior during self-monitoring may serve as a consequence. For example, scoring the presence of an interaction may function as a reinforcer for engaging in positive interactions; whereas scoring the absence of an interaction may function as a punisher for not engaging in a positive interaction (e.g., Olson & Austin, 2001). The present study did not formally evaluate the reinforcing and punishing properties of self-monitoring. It is possible that self-monitoring served a dual function given that

the percentage of intervals with a positive interaction increased and the percentage of intervals without a positive interaction decreased.

Participant self-monitoring may also be a rule-governed behavior (Olson & Austin, 2001). An example of a rule created by staff could be, "If I self-monitor, I will avoid my supervisor's disappointment," or "If I self-monitor, I can get a reward." Schlinger and Blakely (1987) describe rules as contingency-specifying and function-altering stimuli. The rules specify the contingency by indicating that performing a behavior will produce some consequence. The rules are function-altering in that they modify the function of other stimuli present in the three- or four-term contingency. For example, the rule can alter the function of antecedents (discriminative stimuli, establish operations) or the effectiveness of reinforcers and punishers. Thus, the rule "If I self-monitor, I can get a reward" may alter the effectiveness of the reward or may increase the evocative effect of discriminative stimuli (such as the self-monitoring technology). The present study did not evaluate rules generated by the participants, but it would be interesting for future research to address the effects of rules and their interactions with self-monitoring interventions.

Although positive interactions occurred at low percentages during baseline, participants demonstrated that they could correctly perform them. Thus, baseline data suggest that low interactions were not due to a skill deficit (or not knowing how to perform the skill). Both Carson and Sierra demonstrated performance at 100% during baseline conditions. Thus, the data suggest a motivation deficit because participants could perform the skill, but did not consistently do so (Daniels, 2016). Motivation deficits have been responsible for poor employee performance in previous OBM studies. For example, Fox et al. (1987) showed a lack of reinforcement for safety behaviors was responsible for low staff performance, not because staff did not have the

skills to be safe. The interpretation that a motivation deficit is partially responsible for participant performance is interesting because the self-monitoring intervention did not contain programmed reinforcement. It is possible that the tablet screen displaying the cumulative number of interactions participants had during the session served as a reinforcer. Future research should evaluate variables within self-monitoring procedures, such as the data that appears on the screen, to find which variables reinforce behavior and effectively motivate staff.

**Limitations and Future Directions**

The results of this study suggest that technology-based self-monitoring may have utility in human service settings, but it contains limitations to be addressed in future research. For instance, I did not administer an assessment to develop an intervention to increase interactions. Carr et al. (2013) developed the Performance Diagnostic Checklist – Human Services to identify reasons for staff performance problems in human service settings and it has been shown to be a valid tool (Wilder et al., 2020), and has been effective at guiding interventions that improve performance (Smith & Wilder, 2018). Future studies addressing staff–consumer interactions may benefit from using this type of assessment to develop individualized interventions.

Due to time constraints and participant attrition, I could not fade intervention components to evaluate if portions of the self-monitoring procedure, such as recording interactions without the beep or providing intermittent feedback, could maintain positive interactions. DiGennaro Reed et al. (2007) implemented a dynamic fading procedure with teachers in a residential setting for students with brain injuries. Teachers received reduced feedback about their implementation integrity if their performance maintained at 100% for three consecutive days. Upon meeting criterion, the feedback schedule was thinned to every other day, once per week, and then once every 2 weeks. If performance deteriorated, the feedback scheduled would be increased until the

fading criterion was met. It would be interesting for future studies to evaluate the effects of fading strategies, such as a thinned schedule of feedback or the removal of components of the self-monitoring intervention, on positive interactions. Future research regarding the outcome of fading could make the intervention more manageable for staff and supervisors.

The lack of social validity data from all participants is a limitation of the current study. Only one participant returned the social validity questionnaire, and the consumers' preferences for staff interactions before or throughout the study were not assessed. Participant acceptability of procedures is advantageous because acceptable interventions are more likely to be implemented over time (Parsons & Reid, 1995). Moreover, implementing an intervention that impacts consumers should seek information on the acceptability of such procedures to protect consumer rights. Feedback from staff and consumers may produce valuable information to improve the quality of systems and processes, making interventions more feasible for staff and more acceptable to consumers (Wolf et al., 1995). Future research could identify novel ways to measure acceptability, including how often staff assent to self-monitor and ways to obtain consumer input.

Ongoing evaluation of technology is warranted given the cost of purchasing technology. Although the use of technology is increasing in human service settings, the initial investment in technology can be expensive. For example, at the time of purchase, the tablet used in the study cost $111.96, including tax and shipping. If an organization had 20 homes and each home had one tablet, overall costs would be $2,239.20. Typically, each home has two to four staff depending on the number of consumers in the home and staff-to-consumer ratios, so to provide each staff with a tablet again increases the cost. A possible way to reduce this expense is to use staff's smartphones. Smartphones have been used to monitor a range of behaviors such as

physical activity (Kirwan et al., 2012) and medication adherence (McBride et al., 2020). However, the agency would need to ensure sensitive data are not stored on staff phones. Future research should explore less costly alternatives and the potential return on investment.

**Conclusion**

Results of the present study provide support for technology-based self-monitoring and feedback in group homes as a resource-efficient way to increase interactions between staff and consumers. It is important for research to continue evaluating interventions that are effective, efficient, and acceptable (Parsons et al., 2012) for human service settings as resources are scarce (President's Committee for People with Intellectual Disabilities, 2017) and consumer outcomes may be affected (Burg et al., 1979; Parsons et al., 1989; Sturmey, 1995). Using technological advancements and evaluating self-monitoring is one way to embrace such organizational challenges and still deliver quality services.

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**Tables**

**Table 1**

*Positive Interactions and Example*

| Interaction | Example |
| --- | --- |
| Compliment consumer | "You look nice today!" |
| Conversation with consumer | "Did you enjoy the movie?" |
| Greet consumer | "Hi, great to see you!" |
| Provide appropriate physical interaction | High fives or pats on the back |
| Provide expression of care | "It looks like you are sad, is everything okay?" |
| Deliver praise for appropriate behavior | "Excellent job (specify behavior)." |

**Table 2**

*Accuracy Data for Self-Monitoring and Self-Monitoring Plus Feedback Phases*

|        | Accurate | Omission | Commission |
|--------|----------|----------|------------|
| Sierra | 49.4%    | 49.4%    | 1.2%       |
| Billie | 21%      | 71%      | 8%         |
| Carson | 67.9%    | 9.9%     | 22.2%      |

**Table 3**

*Response to Social Validity Questionnaire*

| Question | Response |
|---|---|
| I like the procedures used to assist me in learning how to self-monitor. | 6 |
| Overall, the procedures used would be beneficial for teaching self-monitoring to new staff. | 6 |
| Self-monitoring is an acceptable way to increase interactions between staff and consumers. | 6 |
| Self-monitoring should prove effective in increasing interactions between staff and consumers. | 6 |
| I would suggest self-monitoring to increase interactions between staff and consumers. | 6 |
| Self-monitoring would not result in negative side-effects for the staff. | 5 |
| Self-monitoring is a fair way to handle increasing interactions between staff and consumers. | 6 |
| I liked self-monitoring to increase interactions between me and consumers. | 6 |
| Overall, self-monitoring is beneficial in increasing interactions. | 6 |
| Do you use self-monitoring when you are not required to? | Yes |

# Figures

**Figure 1**

*Time-Series Data and Heat Map of 5-min Interval*
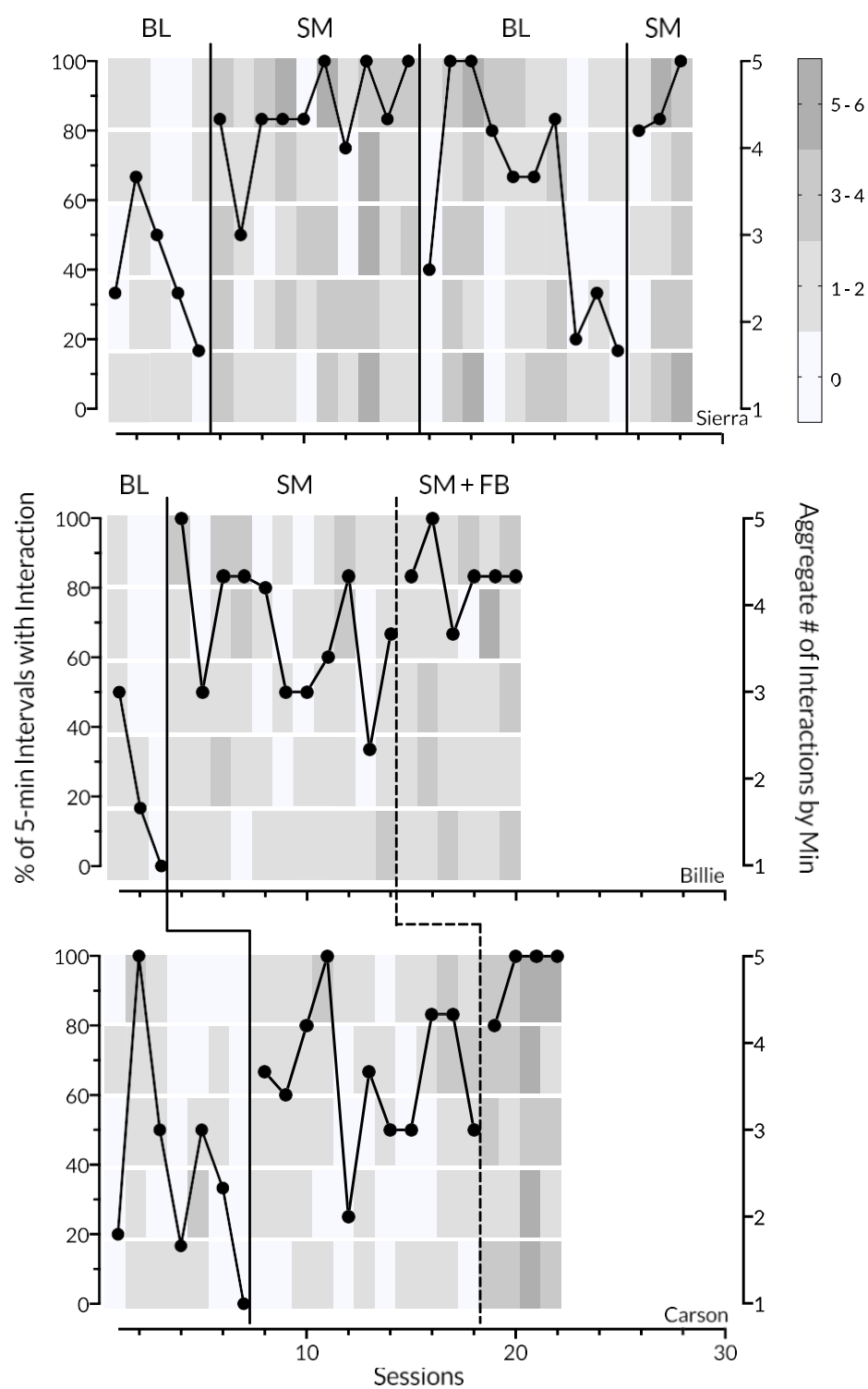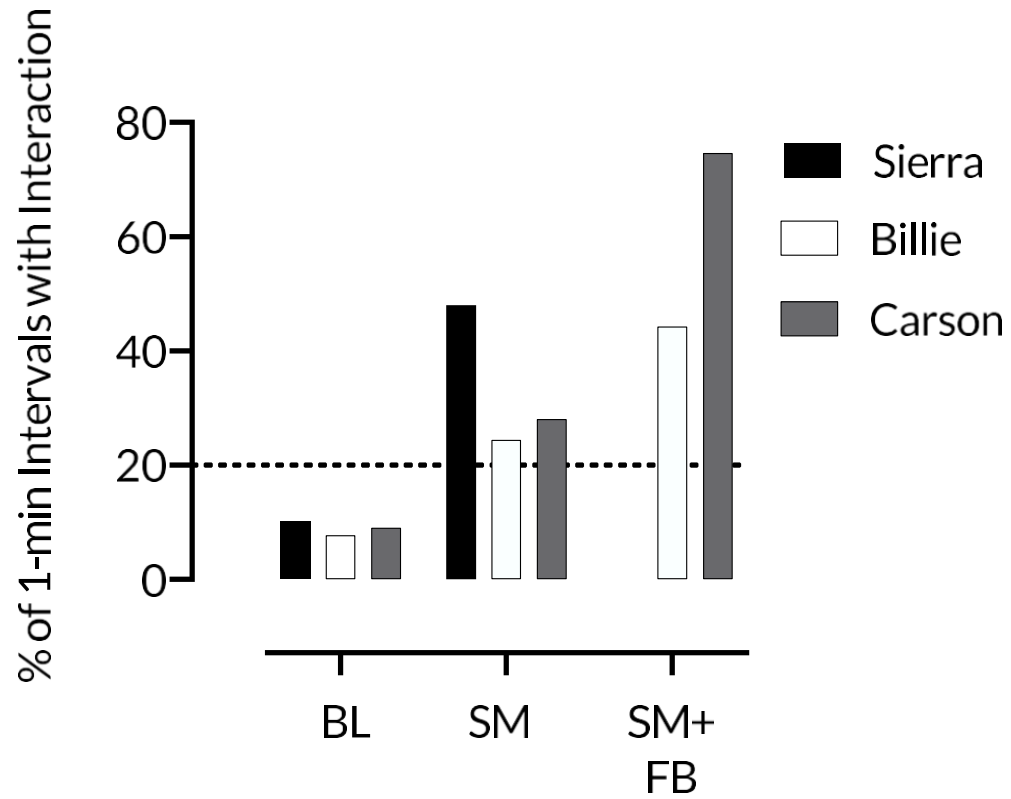
**Figure 2**

*Bar Chart of Interactions from 1-min Intervals*



*Note.* Sierra did not receive feedback

**Appendices**

**Appendix A**

Off-site office suite

**Appendix B**

Supervisor recommendation recruitment

Greetings,

I hope this email finds you well! I am Sandra Ruby, a doctoral student working with the Performance Management Center at the University of Kansas. I am writing today because our center has been approved to conduct research in the residential homes that are part of (organization), and we would like your assistance selecting participants who you think would benefit from our study. The study is titled, "The effects of self-monitoring on staff-client interactions". With this study our goal is to evaluate the interactions between direct-care staff and clients in the home using self-monitoring, and to find resource-efficient ways to support staff that enhance employee satisfaction and facilitate the highest quality of life for the individuals you support.

If you are willing to provide recommendations of those staff members that could potentially benefit from this research, please reply with an email along with contact information.
If you have further questions or need clarification, please send me an email and I will be happy to answer.

Best,
Sandra Ruby

# Appendix C

## Informed Consent Statement

Effects of Self-Monitoring on Staff-Client Interactions

INTRODUCTION

The Department of Applied Behavioral Science at the University of Kansas supports the practice of protection for human subjects participating in research. The following infonnation is provided for you to decide whether you wish to participate in the present study. You may refuse to sign this f01m and not participate in this study. You should be a.ware that even if you agree to participate, you are free to withdraw at any time. If you do withdraw from this study, it will not affect your relationship with this unit, the services it may provide to you, the niversity of Kansas, or your employer. Pa11icipating in this study will not affect your employment at (organization).

PURPOSE OF THE STUDY

The purpose of the cun-ent study is to evaluate the effects of a self-monitoring intervention on direct-care staff

PROCEDURES

The study aims to measure the effects of a self-monitoring with an additional prompt on participant-client interactions, while also identifying if tablet applications are an effective mode of self-monitoring. To do this researchers will provide a tablet and training for self-monitoring. Training may include instruction, demonstration, practice, and feedback about pe1fom1ai1ce. Then, you will monitor your interactions with clients. Data collected for this study will be used for research purposes only and is separate from infonnation (organization) gathers regarding your employment (e.g., annual evaluations). Before and after you receive the training described above, we will measure your perfo,mance on relevant work tasks.

Self-monitoring will take place once per day 3-5 days per week for 1-2 hours. After the session has ended, you will use the app to send the data to the researchers using email default settings set up in the a.pp. We will also ask you to rate your satisfaction with the training procedures and provide a little bit of infonnation about yourself, which will involve less than 10 minutes of your time. The information we gather about you will be de-identified by the research team mid kept in the faculty researcher's locked cabinet in a locked office within a locked suite, with your de-identified data file stored on a password protected computer saved to a secure server in a locked office. Note that all video files recorded by (organization's) video system will be retained on (organization's) server and destroyed consistent with (organization's) policy. We will not save (organization's) video files to KU's server.

RISKS

Minimal risks are anticipated with participation in this study. You might feel uncomfortable sharing your data in publication or presentations; however, all identifiable infonnation will be removed. We will maintain confidentiality consistent with state and organizational mandatory reporting requirements.

BENEFITS

Your participation in this study will benefit society by providing information about the effectiveness of prompted self-monitoring to improve employee pe1fonnance, which will benefit consumers of services of (organization) and possibly other consumers.

PAYMENT TOP ARTICIPANTS

Upon completion of the study you will be given a $50 ClinCard. Research sessions will take place during scheduled hours at (organization) (i.e., you will receive your nonnal pay during this time). Investigators may ask for your social security number in order to comply with federal and state ta,'I'. and accounting regulations.

PARTICIP *TT* CONFIDENTIALITY

Your name will not be associated **in** any publication or presentation **with** the infom1ation collected about you or with the research findings from this study. Instead, the researcher will use a participant number or a pseudonym rather than your name. Your identifiable infonnation will not be shared unless required by law or you give written pe1mission.

Permission granted on this date to use and disclose your information remains **in** effect indefinitely. By signing this form, you give permission for the use and disclosure of your infonnation for purposes of this study at any time **in** the future.

REFUSAL TO SIGN CO SE T AND AUTHORIZATION

You are not required to sign this Consent and Authorization form and you may refuse to do so without affecting your right to any services you are receiving or may receive from the University of Kansas or to participate in any programs or events of the niversity of Kansas. However, if you refuse to sign, you cannot paiticipate in this study.

CA CELLING THIS CONSENT AND A THORIZATION

You may withdraw your consent to participate in this study at any time. You also have the right to cancel your permission to use and disclose further infonnation collected about you, in writing, at any time, by sending your written request to:

Researcher

1000 Sunnyside Avenue, 4001 Dole Human Development Center,

Lawrence, KS 66045

If you cancel pennission to use your infonnation, the researchers will stop collecting additional infonnation about you. However, the research team may use and disclose infonnation that was gathered before they received your cancellation, as described above.

QUESTIO S ABOUT PARTICIPATIO

Questions about procedures should be directed to the researcher(s) listed above.

PARTICIPANT CERTIFICATION:

Study rune: Effects of Self-Monitoring on Staff-Client Interactions

I have read this Consent and Authorization fonn. I have had the opportunity to ask, and I have received answers to, any questions I had regarding the study. I understand that if I have any additional questions about my rights as a research participant, I may call (785) 864-7429 or (785) 864-7385, write tbe Human Research Protection Program (HRPP), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7568, or email irb@ku.edu.

I agree to take part in this study as a research paiticipant. By my signature I affom that I am at least 18 years old and that I bave received a copy of this Consent and Authorization form.

_____          _____

Type/Print Participant's Name                                      Date


_____

Pruticipant's Signature

## Appendix D

Demographic Questionnaire

Participant ID:

Age:

Gender:
 QMale
 QFemale

Race/ethnic background:
 O  White/Caucasian
 O  Black/African American
 O  Hispanic/Latino
 QAsian
 O  Native American
 O  Pacific Islander
 QMixed
 O  Other

What is your highest level of education?
 Q  High school/GED
 O  Some college, but did not obtain a degree
 O  Associate's degree
 O   Bachelor's degree
 O  Master's degree
 O  Doctorate

If you obtained a degree, what was your major or field of study?

How long have you been employed at **XXX?**

What is your job title at XXX?

What is your past experience with self-monitoring?

# Appendix E

Self-Monitoring

Sandra's Cell: (XXX)XXX-XXXX
Tablet Password: XXX

Countee:
1. Click "Self-monitoring"
2. Click "New Session"
3. Enter the **date** for the session name
4. Click "Create"
5. Close out of Countee and open Interval Timer

Interval Timer:

<div align="center">

Sets
6

Work Interval
04:30

Rest Interval
00:30

</div>

6. Check that the "Sets, Work Interval, and Rest Interval" are the same as above, press the play button on the bottom right corner to begin a 5-second countdown
7. Re-open Countee and click "Start session" when the 5-second countdown ends
8. You will record "Interaction" or "No Interaction" during the 30-second time interval
9. Each session will last 30 minutes
10. After the time interval is over, press "Save & Close"

Send Data:
1. At the top of the Countee app there are two options: New Session and My Sessions
2. To send the data press My Sessions
3. Then click that day's session
4. Then on the top right corner press "Email"
5. Then select the Gmail icon
6. Enter email
   a. selfmonitoring2019@gmail.com
7. Then press the send button (airplane icon)
8. Charge tablet

**<u>Interaction:</u>**
Any time you engage with a consumer in the following ways: giving a compliment, conversing with a consumer, greeting a consumer, providing appropriate physical interaction, providing an expression of care, and praising the behavior of the consumer.

**<u>Examples of interactions</u>:**
Give compliment: "You look nice today!"
Converse with consumer: Talk about preferred topics, fun things to do
Greet consumer: "Hi! Great to see you!"
Provide appropriate physical interaction: High fives, pats on the back
Provide expressions of care: "It looks like you are sad – is everything ok?"
Deliver praise for appropriate behavior: "Excellent job [specify behavior]!"

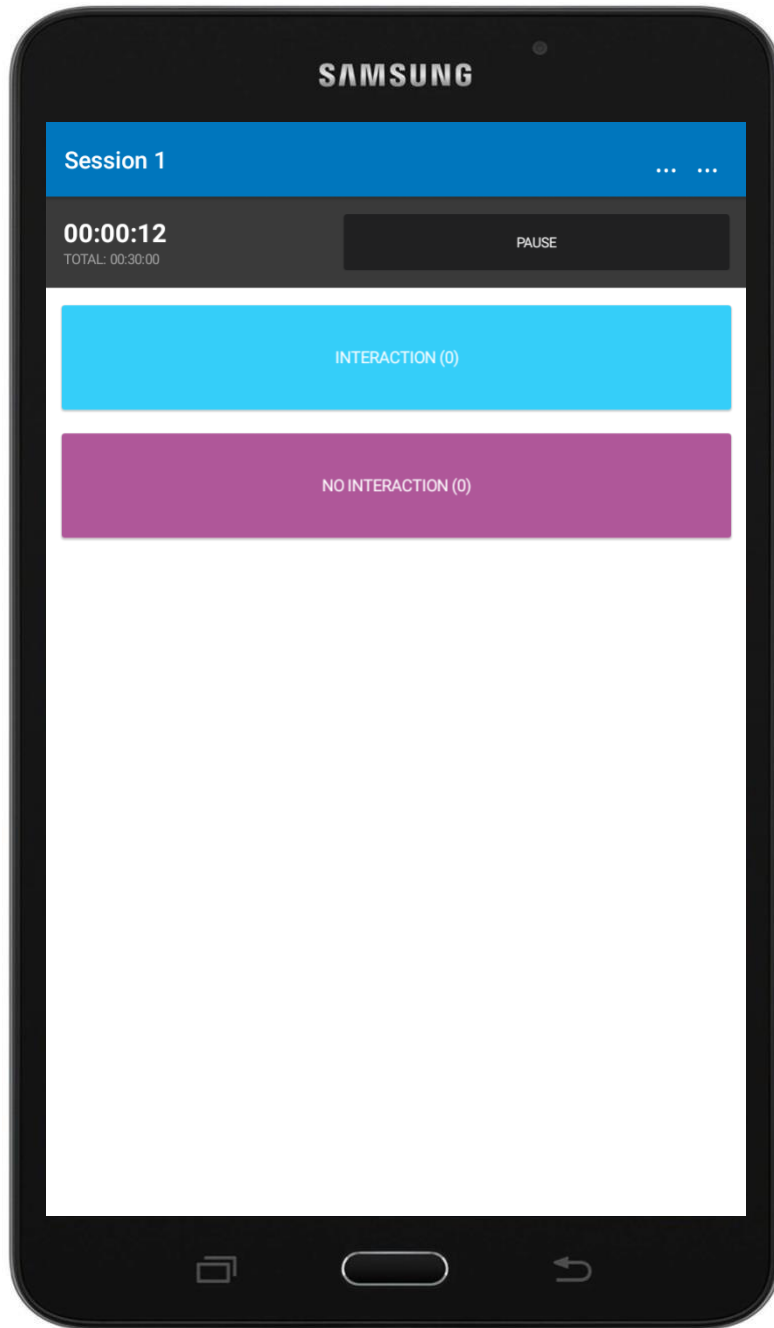**<u>Interactions do not include:</u>**
Teaching programs
Medicine administration
Behavior plan implementation
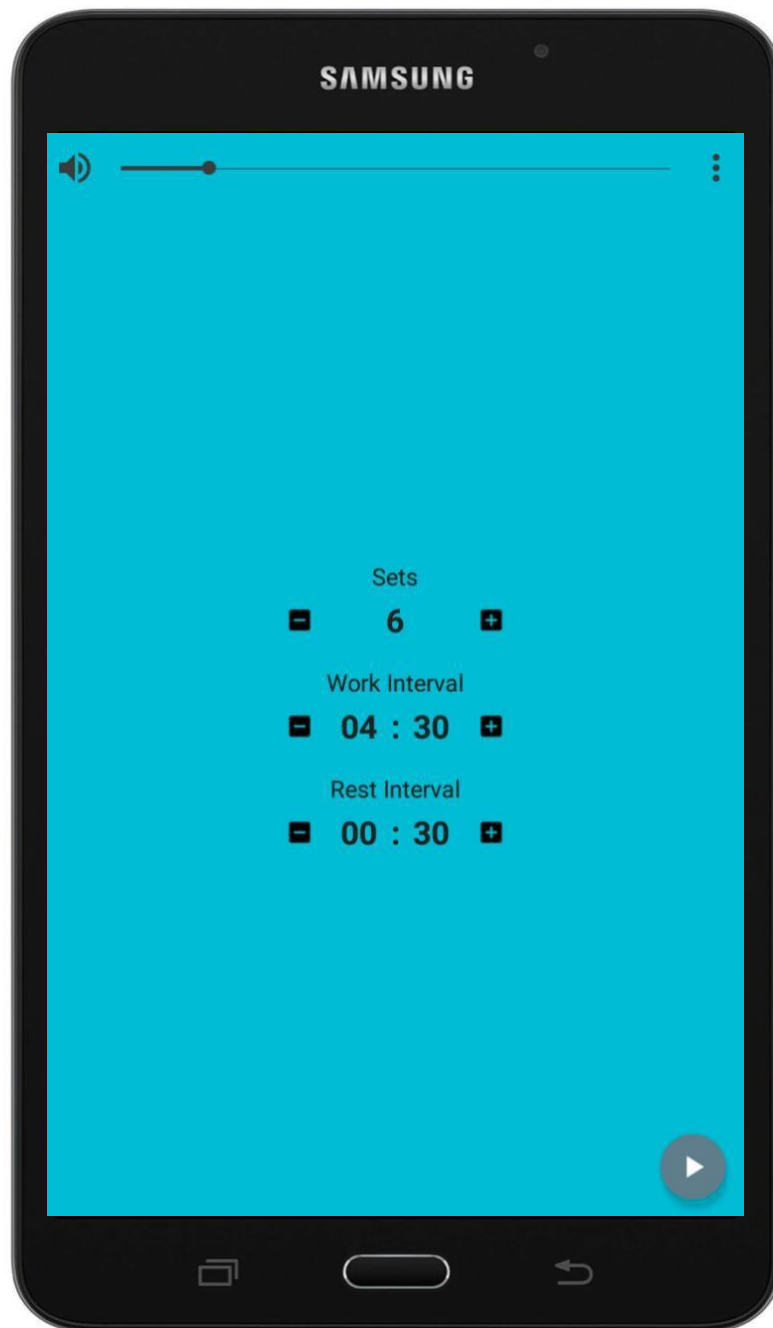Redirection statements or unkind statements/interactions

**Appendix F**

Countee in-session screen

**Appendix G**

Interval timer pre-session screen

**Appendix H**

Training integrity checklist

Date of training:_____
Observer:_____
Experimenter:_____
Participant:_____

**Training Integrity**

| Steps | Occurrence (+, -, N/A) |
|---|---|
| Introduction | |
| Tells participant interactions will be recorded every 5 minutes | |
| Explains healthy behavior practices (one interaction with consumers every five minutes) | |
| Define interaction: | |
|     Read and show definition | |
|     Provide examples/non-examples | |
|     Quizzes participant | |
|       Provides corrective feedback, if necessary | |
| Tells participant about contacts | |
|     First at 10 a.m. on the day | |
|     Second 5-minutes before session begins | |
|     Sessions will be no more than once a day | |
|     Study could last a month or two | |
| Researcher says and models tablet password | |
| Researcher orients participant to tablet | |
| Countee | |
| Describes how to use Countee | |
| Models how to use Countee | |
| Allows participant to practice | |
| Provides feedback | |
| Interval Timer | |
| Describes how to use Interval Timer | |
| Models how to use Interval Timer | |
| Allows participant to practice | |
| Provides feedback | |
| Sending Data | |
| Describes how to send data | |
| Models how to send data | |
| Allows participant to send data | |
| Provides feedback | |

| Mastery | |
|---|---|
| Participant independently set up  appswithout error | |
| Participant rehearsed two five-minute intervals | |
| Questions | |
| Ask if there are any additional questions | |
| Answers questions, if asked | |

Number of +
Number of + and -
Percentage:

**Appendix I**

Social Validity Questionnaire

The purpose of this questionnaire is to get information that will help researchers in their work with training staff to self-monitor. Please circle the number which best describes your agreement or disagreement with each statement.

**1- strongly disagree    2-disagree    3-slightly disagree    4-slightly agree    5-agree    6-strongly agree**

I like the procedures used to assist me in learning how to self-monitor.

1       2       3       4       5       6

Overall, the procedures used would be beneficial for teaching self-monitoring to new staff.

1       2       3       4       5       6

Prompted self-monitoring is an acceptable way to increase interactions between staff and consumers.

1       2       3       4       5       6

Prompted self-monitoring should prove effective in increasing interactions between staff and consumers.

1       2       3       4       5       6

I would suggest prompted self-monitoring to increase interactions between staff and consumers.

1       2       3       4       5       6

Prompted self-monitoring would not result in negative side-effects for the staff.

1       2       3       4       5       6

Prompted self-monitoring is a fair way to handle increasing interactions between staff and consumers.

1       2       3       4       5       6

I liked prompted self-monitoring to increase interactions between me and consumers.

1       2       3       4       5       6

Overall, prompted self-monitoring is beneficial in increasing interactions.

1       2       3       4       5       6

Do you use self-monitoring when you are not required to?

Yes        No

Comments regarding prompted self-monitoring to increase interactions.