Does Mindfulness Training Change Staff Behaviours Toward Persons with Developmental Disabilities?

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Abstract

To be mindful means to be in the moment, focusing on your mind, body and surroundings (Kabat-Zinn, 1990). Mindfulness training programs for caregivers of persons with developmental disabilities can benefit the caregivers and their clients (Singh, Lancioni, Karazsia, Chan, & Winton, 2016). Few studies have reported effects on specific caregiving behaviours. In a multiple-baseline-across-participants experiment, a brief mindfulness training session was evaluated by directly observing: announcement of actions prior to contact with client, looking away from the client or caregiving activity, and making contact at the torso prior to touching an extremity. Participants were three adult female staff (two DSPs and one nurse) and one adult male client. Announcements and torso-before-extremity contact increased and looking away decreased for all staff following the training; not all improvements were maintained over an extended period. Client happiness and unhappiness indicators were measured before and after the training, but no clear effects were observed.

Keywords: mindfulness, staff training, developmental disabilities, environmental stimuli, behaviour change

Does Mindfulness Training Change Staff Behaviours Toward Persons with Developmental Disabilities?

Popular and scientific interest in mindfulness has grown in recent decades. A variety of mindfulness programs have been developed to promote specific outcomes (e.g. stress reduction) or to be applied in particular settings (e.g. work, or relationships). Evaluations of these programs often show many benefits; however, most programs take place over a long period of time, making it expensive as well as challenging to provide mindfulness programs to an entire organization. Caregivers of persons with developmental disabilities are of particular interest as they are employed in stressful jobs with high turnover. Staff responsibilities include care covering every aspect of an individual's life. Attention to how this care is provided is important. *Mindful Practice for Direct Service Providers* (MPDSP) is a staff mindfulness training session developed by massage therapist Andrew Terhoch at St.Amant in Winnipeg, Manitoba. The goal of MPDSP is to improve caregiving through a short mindfulness session. This study evaluated the effects of MPDSP on specific staff care behaviours.

The ancient practice of mindfulness does not yet have a universally accepted definition (Singh, Lancioni, Wahler, Winton, & Singh, 2008), but it may be described as a way of focusing in the moment on immediate surroundings as well as internal factors such as the mind and body (Kabat-Zinn, 1990). This is done non-judgmentally, with acceptance of the present situation. Being mindful in any environment means to be deliberately engaged and aware of both one's experience and that of others.

Various programs have been created to increase mindfulness. Typical mindfulness programs involve one or more weekly sessions over a period of several months, and teach meditation followed by sessions of homework with daily exercises and practice. Evaluations

have shown that no single method of mindfulness is completely effective for everyone (Bishop et al., 2004). The approach should be tailored to the individual and the situation. Some mindfulness programs are intended for clinical populations while other mindfulness programs are intended for the general public. Most general mindfulness programs are delivered to groups, whereas in clinical settings mindfulness is more likely to be taught one-on-one (Chapman et al., 2013). Examples of mindfulness programs, or interventions that incorporate mindfulness, frequently cited in literature include Mindfulness-Based Stress Reduction, Dialectical behaviour therapy, Acceptance and Commitment Therapy, and Mindfulness-based cognitive therapy (Bishop et al., 2004; Harris, 2006; Kabat-Zinn, 1998; Linehan, Armstrong, Saurez, Allmon, & Heard, 1991).

Mindfulness programs have been shown to be highly effective in promoting psychological well-being (Keng, Smoski & Robins, 2011; Ma & Teasdale, 2004; Nyklíček & Kuijpers, 2008; Shapiro, Oman, Thoresen, Plante & Flinders, 2008; Shapiro, Schwartz & Bonner, 1998). Extensive research has shown positive effects of mindfulness programs on stress reduction in a variety of settings (Nyklíček & Kuijpers, 2008; Shapiro, Oman, Thoresen, Plante & Flinders, 2008; Shapiro, Schwartz & Bonner, 1998). Individuals in mindfulness programs are shown to have statistically significant reduced levels of distress and depression, indicating that mindfulness techniques are an effective method for behavioural regulation and emotional reactivity reduction (Keng, Smoski & Robins, 2011; Ma & Teasdale, 2004; Shapiro, Schwartz & Bonner, 1998). In addition, mindfulness programs increase overall well-being and perceived overall quality of life (Nyklíček & Kuijpers, 2008; Keng, Smoski & Robins, 2011).

Mindfulness and Persons with Developmental Disabilities

Developmental disabilities are mental conditions diagnosed prior to age 18 that may be accompanied by physical impairments which impacts the individual in a variety of everyday

settings and situations due to their intellectual functioning and adaptive behaviour (American Association on Intellectual and Developmental Disabilities, 2013). The prevalence of developmental disabilities has been steadily increasing (Stough, 2015) with a worldwide prevalence of 1.5 - 2.5% (Special Olympics, 2009). Canadian prevalence of developmental disabilities ages 0 to 64 ranges from 0 .6% to 1.9% and 0.4% to 0.9% in males and females respectively (Statistics Canada, 2011).

The majority of persons with developmental disabilities reside outside their family home (Mirenda, 2014), and require assistance with activities of daily living. Support workers for persons with developmental disabilities may assist in virtually all areas of the person's life such as daily bathing, cooking, feeding, dressing, assistance with toileting, transportation and much more. Persons with developmental disabilities may require 24-hour care by trained professionals.

Some persons with developmental disabilities have limited or no speech, so care-providers must pay extra attention to the individual's physical and mental well-being. Kastner et al. (1993) studied the mortality of a population of 1,300 persons with developmental disabilities being served by The Developmental Disabilities Center at Morristown Memorial Hospital over a four-year period. They evaluated deaths of 14 persons aged 10-79 with developmental disabilities within the community and found 43% could have been avoided. All 6 out of 14 cases could have been prevented with appropriate recognition of patient ailments.

The demands of providing persons with developmental disabilities the necessary support can make it difficult for organizations to retain staff in support worker roles (Larson, 1997). There are a number of contributing factors to a high turnover rate, from not enough pay to high levels of burnout (Ben-Dror, 1994; Mickillop & Minnes, 2011). When clients display challenging behaviours, it can lead to increased stress and/or injury and staff may require

additional coworkers to assist them. Understaffing in these high demand jobs can contribute to staff burnout. When staff are happier they tend to stay in their jobs for longer periods of time (Mickillop & Minnes, 2011).

Mindfulness training can improve physical and psychological well-being for caregivers of persons with developmental disabilities (Brooker et al., 2014; Chapman et al., 2013; Fjorback et al., 2011; Singh et al., 2004). Healthcare staff with mindfulness training have a 20% reduction in stress, 19% increase with life satisfaction and 6% decrease in job burnout compared to a control group (Shapiro, Astin, Bishop & Cordova, 2005). Staff mindfulness training can also lead to fewer interventions for client problem behaviours being required, which in turn results in improved work conditions for caregivers (Singh et al., 2006).

Brooker et al. (2014) examined the effects of Occupational Mindfulness, an 8-week staff mindfulness program, on two residential service homes' use of restrictive interventions. Data were collected utilizing the facility's system of recording chemical and physical restraints. Staff who worked with persons with disabilities and who attend mindfulness training provided improved care, with a 48.2% reduction in chemical restraints (Brooker et al., 2014). Seclusions of clients also dropped significantly, by 57.9% (Brooker et al., 2014). The decrease in restraints has a direct positive effect on quality of life of clients.

Staff mindfulness training can lead to significant changes in client happiness indicators. Singh et al. (2004) evaluated an 8-week staff mindfulness program and studied its resulting effect on happiness indicators for clients with profound multiple disabilities. When staff participated in mindfulness training, client happiness indicators increased by a range of 146-437%. When staff did not receive mindfulness training, client happiness indicators were only increased by a range of 1-11%.

Mindfulness training programs vary in duration. Noone and Hastings (2010) evaluated the effectiveness of a day and a half program entitled Promotion of Acceptance in Careers and Teachers Intervention. Participating support staff experienced reduced psychological distress, although perceived work stress did not decrease. Most mindfulness programs for staff and caregivers are much longer, ranging in length from five days (Singh et al., 2006) to twelve weeks (Singh et. al, 2007). Shorter programs have several potential benefits, however. They may be more cost effective, as well as easier to administer to large groups of individuals. Perhaps most importantly for caregivers, a shorter mindfulness program means less time taken away from serving clients.

Mindful Practice for Direct Support Providers

MPDSP is a short, comprehensive mindfulness training session for caregivers of clients with developmental disabilities at St.Amant. It is a three-hour session in which staff learn and understand mindful ways to interact with clients. The MPDSP session develops intent and communication skills and uses practical exercises to create staff awareness of clients' perception of care. This provides staff the opportunity to observe, recognize and change stimuli in the environment that are negatively impacting the client or themselves. The behaviours taught in the MPDSP session are designed to create a more positive environment for both client and staff. The goals are improved care and wellbeing for clients and improved wellbeing along with reduced stress and burnout in staff.

During MPDSP, the facilitator defines mindfulness and provides staff with an understanding of what it is, how to achieve it and how it can be applied. There are a few activities designed to help staff better understand how their behaviours affect the clients they serve. The first activity involves pairing with a co-worker and assigning each member as "staff"

or “client.” The “client” is blindfolded while the staff member pretends to provide care. At first, the staff member does not announce their actions and grabs at their partner to “provide care.” This activity mimic's a client’s experience when they are receiving care but don’t understand what staff are doing. The activity demonstrates the principles of developing intent and communication while staff learn the importance of announcing their actions to clients prior to contact. Doing so may decrease the client’s startle and surprise, and in turn reduce the likelihood of fight-or-flight behaviour. When announcements are made prior to care, contact is less alarming to the client.

The MPDSP session teaches staff that certain areas of the body are more sensitive than others and that clients may experience sensations in an amplified manner. This discussion highlights the principle of awareness. Clients are touched by strangers on a daily basis, frequently without them understanding what is happening. This can increase client stress, anxiety, and challenging behaviours. Appropriate *Body to Limb Contact* involves the use of reassuring contact during care activities, whereby staff move from an area on the body with less sensitivity to areas with greater sensitivity. For example, when staff want to examine an individual’s fingernails they first approach the client by putting their hand on the client’s back moving their hands one in front of the other until they reach the client’s hand. Sensitivity to stimuli can be felt not only through touch but through a variety of sensations.

A video by Miguel Jiron (2012) is shown to staff to demonstrate sensory overload, in which every day sensations might become overwhelming to a client. This video is followed by a discussion on stress and how it impacts clients and staff and their ability to cope. Staff learn how to conduct a sensory audit in which the caregiver observe stimuli in the environment that might impact their client.

Staff view an additional video of a person with cerebral palsy describing their perspective of care experiences. This video encourages the caregiver to take a client's perspective. Increased patience with clients is discussed, which translates to the client completing tasks on their own as opposed to rushing the client and staff performing them out of frustration. The training teaches staff to be more cognisant of their client's experiences such as their sensations and feelings by encouraging them to understand their client's gestures and facial expressions.

MPDSP addresses the benefits of mindfulness for both clients and caregivers through the exploration of three guiding principles: intent, communication and awareness. These principles are related to actions by staff to ensure they are practicing mindful care. The training is completed by a re-cap of the session. A step by step summary of the MPSDP session can be found in Appendix A.

Purpose

The purpose of this research was to identify changes in relevant staff behaviour after completion of the MPDSP program and evaluate the effect these changes have on clients, in terms of happiness indicators and challenging behaviours. The project therefore makes several important contributions. First, little research is available on how staff provide support differently as a result of increased mindfulness. Yet for any staff mindfulness program to result in positive outcomes for clients, observable staff behaviour must change. Second, MPDSP has to date not been experimentally evaluated. Third, MPDSP is also the briefest mindfulness training session known to the researchers. Results from this study may therefore have numerous implications for future research and training methods for organizations.

Method

Participants and Recruitment

Participants included three female adult staff members working at St.Amant and one male client. Information about the staff participants were collected by a Background Questionnaire (Appendix C). Participant 1 had a high school diploma, worked as a resident assistant, and indicated an age range of 36-45 years. Participant 2 had a trade/apprenticeship qualification, worked as a resident assistant, and indicated an age range of 26-35 years. Participant 3 had a university/college certificate, worked as a Licensed Practical Nurse, and indicated an age range of 46-55 years. All three participants had worked at St.Amant, in their field for 4 years or more. English was the first language for all.

All staff participants stated they knew about mindfulness and explained it as being “aware of the client’s feelings” and “being respectful”. None of the participants had read a book on mindfulness, taken any mindfulness training, or engaged in meditation. Two of the three reported they try to apply mindfulness in their everyday life and all three said they use it at work. Sample statements of how mindfulness was applied include, "by treating the clients like friends”, “speaking to them even if they are non-verbal”, “explaining to the clients what [they] are doing”, and "by speaking softly and knocking before entering a room”.

All adult support worker participants completed a consent form prior to participation. St.Amant’s Privacy Officer mailed recruitment packages to St.Amant staff. Each package included a Recruitment letter, Project Description and Consent Form. St.Amant employees had the researcher’s contact information and communicated with them directly if they wanted more information about the project or to participate in the study. St.Amant requires all staff to

complete MPDSP, if staff complete the MPDSP training session with the researchers, they were not required to do it again.

Honorariums were provided to staff members for their participation. Each participant received $50 for each of the three phases in the study. All three staff members remained participants for the duration of the study, resulting in an honorarium of $150 each. Once consent was given, staff were asked to fill out a form indicating the three clients to whom they provide the most care. This document was given to St.Amant's Privacy Officer, who then mailed recruitment packages to client substitute decision makers.

Following staff consent, the researchers asked staff to nominate clients to whom they provided the most care. Staff sent nomination forms to the St.Amant Privacy Officer and recruitment packages were send to the decision makers of the clients. Efforts were made to recruit one client per staff participant, but only one staff/client participant pair was successfully recruited. The client was an adult with developmental disabilities supported by one of the staff participants at St.Amant. The substitute decision maker of the selected clients received recruitment packages. Each package included a Recruitment letter, Project Description and Consent Form. The client's substitute decision maker had the researcher's contact information and had the option to communicate with them directly if they wanted more information about the project or client participation in the study. The substitute decision maker for the client participant completed and submitted the consent form to the researchers on behalf of the client.

Setting

All three participants provided care to their clients at River Road Place, a residential program operated by St.Amant with group living units for individuals with developmental disabilities. For clarity in this study, the three units where observations occurred will be referred

to as A, B, and C. Each staff worked consistently with a small number of clients throughout the study. Observations were distributed across care provision to each of the clients in approximately the same proportions before and after the MPDSP training.

The study setting was naturalistic as it was not modified in any way by the researchers. Most care activities that involved eating and medication administration occurred in common areas on the unit, with additional staff and clients in the area. Care activities that were more intimate such as brushing a client's teeth or transferring a client from their bed to wheelchair usually occurred in the client's bedroom. Most clients had their own room, however some shared with a roommate. The observations of each staff were made at approximately the same time during their respective shifts to reduce uncontrolled variables. Most of the staff on the same units as the participants had received the MPDSP training. All three staff participants were observed working with clients who did not consent to participation therefore data was only collected on the staff during those observations.

Participant 1 spent most of her time on Unit A and typically worked evening shifts. Observations were made during the bedtime routines. Participant 1 worked primarily with 3 clients but occasionally assisted other staff and worked with as many as 7 clients during the observations. Participant 1 did not have any observation sessions with the client participant.

Participant 2 split her time between Units B and C. Participant 2 typically worked morning shifts and observations were made during their morning routine. Participant 2 worked with as many as 15 clients on Unit B and 14 clients on Unit C. Participant 2 did not have any observation sessions with the client participant.

Participant 3 spend most of their time on Unit C and typically worked morning shifts. Observations were made during the morning routines. Participant 3 worked primarily with 3

clients but occasionally assisted other staff and worked with as many as 7 clients during the observations. Only one client provided consent for research participation. This client was typically cared for by Participant 3.

Design

This study used a concurrent multiple baseline across participants (staff) design. Each experimental phase (i.e., pre-baseline, baseline, post-intervention, and follow-up) consisted of 24-170 observation sessions over a 2-month period. There were one to five observation sessions a week, with each observation session lasting anywhere between 5 seconds to 8 minutes and 20 seconds. All staff participants started their baseline within 20 days of each other. The follow-up started a month after the last observation in the post-intervention phase, approximately 3 months following the MPDSP training. The study in its entirety had a duration of approximately 6 months.

The introduction of the intervention for all three participants was affected by three factors. Firstly, it was the researchers aim to introduce each participant to the training after the staff behaviours were stable. Stable data are data that show little variability over a period of time, representing no change, a decreasing trend, or a predictable pattern of behaviour (Kazdin, 2011; Johnson, Pennypacker & Green; Sidman, 1960). Secondly, St.Amant was promoting attendance to the MPSDP training as an important staff priority, which restricted flexibility in delaying participant attendance Finally, MPDSP training sessions occurred at a limited number of scheduled deliveries over the duration of the experiment. The training needed to be scheduled well in advance to ensure that service areas weren't understaffed as the training took place during the staff members' shift. Each participant was placed in an MPDSP training session by their supervisor, with some input by the researchers, keeping these factors in mind. The MPDSP

training session was administered to one of the staff members while the other participants remained in the baseline phase. To determine when the next staff received training, the previous three factors above were considered and researchers aimed to schedule training once the post-training phase was stable for the first staff. This continued until all staff completed the MPDSP training. Data were collected by the primary researcher and two research assistants.

Measures

Staff. Three staff behaviours were observed as they provided care to clients. The first behaviour observed was staff's appropriate announcement of their imminent action to the client before performing care. Announcements were defined as any instance when a staff member verbally indicated they were about to perform an action which would impact a client. Care actions appropriate to announce were defined as any that involved initiating personal contact, unless it had been less than 3 s since the most recent personal contact. In the case of brushing hair, for example, staff might preface their action with, "Hi John. I'm going to brush your hair now." The client would then sit through the duration of the activity; staff would not be expected to announce each stroke of the brush. In the example of feeding, staff might announce the delivery of each spoonful: "John, here comes another mouthful of food." This behaviour was recorded each time staff announced their actions and was calculated as the number of announced care actions divided by the number of care actions that would be appropriate to announce.

The second behaviour was looking away. This was defined as losing eye contact with the client and/or losing focus on the task for at least 3 s during a care activity. For example, if a staff member was helping a client eat and they looked up at the TV during this care activity for longer than 3 s, this was considered looking away from the client and/or task. The loss of eye contact with the client or task reflects the importance the MPDSP training placed on visually engaging

with the client and task during an activity. The behaviour was observed using a 5-s partial interval recording system and was calculated by the number of intervals the staff looked away divided by the total number of intervals in the observation session.

Finally, the third behaviour was termed *Body to Limb Contact*. This was defined as initiating personal contact by moving from an area of lower sensitivity (i.e. the torso) to an area of higher sensitivity (i.e. a limb). Personal contact was defined as an initiation if it had been more than 3 s since the prior contact. For example, if staff were to assess whether the client's fingernails needed clipping, the client may startle or become agitated if the staff started this process by grabbing the client's hand. A more appropriate method would be to initiate the care activity by touching the client's shoulder, an area of less sensitivity and then moving to the hand of the client. *Body to Limb Contact* was calculated by the number of intervals the staff initiated a care activity by touching a client from an area of lesser sensitivity to greater sensitivity divided by the total number of times the staff touched the client when an announcement about touching the client was necessary. The definitions of the first and third behaviours were related in that every instance of personal contact, as defined for *Body to Limb Contact*, was an appropriate occasion for activity announcing.

Clients. Client dependent variables included happiness, unhappiness, and inappropriate behaviours. Happiness indicators were defined as any facial expression or vocalization typically considered an indicator of happiness among people without disabilities, including smiling, laughing, and yelling while smiling (Green & Reid, 1999). Unhappiness indicators were similarly defined as frowning, grimacing, crying, and yelling while grimacing (Green & Reid, 1999). Inappropriate behaviours included those that were challenging, socially inappropriate, or generally undesirable to the individual's caregivers and peers. Inappropriate behaviours might

also include self-injurious behaviours, aggressive behaviour towards others, yelling and throwing things (Matson & Neal, 2009). A list of specific dependent behaviours that were most relevant for the client participant was established in caregiver interviews and the Client Specific Behaviours Sheet seen in Appendix B. The client participant happiness indicators included smiling, laughing, and talking excitedly. Unhappiness indicators included complaining and the self-injurious behaviour of picking their forehead. A partial interval recording system was used.

Materials

Background Questionnaire. A 16-item Background Questionnaire collected information about the staff participants. The questionnaire utilized open-ended questions to determine employment history and categorical questions where the respondent selected the option that best described their level of education. This questionnaire also examined the level of understanding and experience the respondents had with mindfulness, using yes-no and open-ended questions.

Insight: Observation Timer app. All staff and client behaviours were recorded on iPads and iPhones using the Insight: Observation Timer app. This app was used instead of paper and pencil method because the app made it easier to observe elapsed time and track intervals. It also only required a tap on the screen to record a behaviour. After comparing the two methods during pilot observations, it was determined there were fewer errors using the Insight app than the paper and pencil method and it improved the ability to focus and spend more time on observations than on manually recording behaviours.

To use the app, researchers first established default settings to record either staff or client behaviours. The interval length was adjusted to be 5 s long, with a maximum of 100 intervals. When the researchers started an observation session, they tapped the start button, which started the timer. When conducting Inter Observer Reliability (IOR), the researchers counted down

before tapping the start button to ensure the same start time on both devices. The researchers were able to tap different buttons to indicate which behaviour they observed during the interval. The data collected using this app were saved as Microsoft Excel files which were used to calculate the measures. The following link is provided for more information or to download the app: https://itunes.apple.com/us/app/insight-observation-timer/id1212950867?mt=8

MPDSP Questionnaire. A 12-item questionnaire collected the participants' opinions on the impact of the mindfulness training. They were also asked whether they would like additional information on any of the material and what content should be included in a booster training session for the MPDSP training.

Procedures

Staff participants. During an introductory meeting staff were asked if they had any questions about the consent form and if they understood what participation entailed. Staff were informed the researchers would be making observations of the care experiences and how consistent they are with the principles of mindful practice. Participants were also advised they had three ways to contact the researchers if they had questions or concerns at any point during the study; email, and cell phone number to either call or text the primary researcher. During this meeting, participants were also asked to complete a Demographic Questionnaire (Appendix C) to collect general information such as gender, age, and how many years they had worked at St.Amant and/or in the field of supporting persons with developmental disabilities. This questionnaire also inquired about the extent of participant knowledge of mindfulness prior to the MPDSP training.

Following the completion of the Demographic Questionnaire, the participants received a short introductory statement about mindfulness (Appendix D). Participants read the paragraph in the presence of the primary researchers and were asked if they had any questions.

Following an introductory meeting to obtain informed consent, the pre-baseline was recorded. The pre-baseline assessments consisted of discussion with staff and observations of staff and clients to determine which care experiences would be most practical and clear to examine. This phase included determining which actions are appropriate to announce prior to providing the care experience and when it would be appropriate and possible for staff to provide comforting contact. The researchers recorded baseline data after the completion of the pre-baseline phase. Before the researchers started collecting any data, they asked the staff to inform them prior to providing care experiences to their client to ensure the observations occurred at the beginning of the interaction. Participant interactions with their clients were observed from a distance that permitted observation of facial expressions, while enabling observers to be relatively unobtrusive (typically about 2-3 metres).

One client was recruited for this study, who was nominated by Participant 3. The client's consent was not received until two months into the study, resulting in their observations being collected over a 2-month period. Data were collected for the client using the same Insight app used to collect data for staff participants. Client happiness indicators were recorded a maximum of once per observation interval regardless of how many times a behaviour occurred during an interval. Each observation session included the staff, the client, and two researchers to collect data. Each researcher had a device to record either staff or client behaviours. The app was started at the same time on both devices to ensure the data were being recorded at the correct time.

MPDSP sessions lasted approximately 3 hr and were held at St.Amant in a training room. Andrew Terhoch, the developer of MPDSP, administered the training session to participants, who attended along with other non-participant staff. To ensure treatment fidelity, a research assistant attended two of the training sessions and used Appendix A as their check list to ensure all items were discussed and all training sessions were identical. The session instructor affirmed that all participants attended and completed their respective sessions. A detailed summary of the instructional components of MPDSP training session is provided in Appendix A. The date participants were scheduled for the MPDSP training depended on three factors: stable staff behaviour, prompting by management to get all staff trained, and limited training session scheduling opportunities. This continued until all participants received the intervention.

Interobserver reliability (IOR). To establish IOR for the observations, research assistants were trained to observe staff and client behaviours as defined previously and practiced collecting data together prior to any data recorded for this study to ensure the target behaviour definitions were applied consistently. Once researchers established similar coding techniques, they began to independently code the data. Agreements and disagreements about occurrence for each behaviour in each interval was counted. The IOR calculations are agreements divided by agreements plus disagreements, with the result expressed as a percentage.

IOR checks were completed on 34% (205/599) of staff observations. Agreement was calculated for each behaviour for each participant. Each participant and phase of experiment was represented in the calculations with approximately 30% of each participant's total observations evaluated for IOR. Agreement was calculated by counting the number of intervals the primary observer and second observer agreed on a behaviour occurring divided by the total number of intervals the primary observer recorded a behaviour occurring. Announcements and *Body to*

Limb Contact required two measures each to calculate the ratio graphed. The Announcement measure was calculated by dividing the number of announcements by the number of announcements plus number of actions performed by the staff that were not announced. *Body to Limb Contact* was calculated by the instances *Body to Limb Contact* was conducted divided by the instances of *Body to Limb Contact* plus the instances the staff touched the client directly instead of using the *Body to Limb Contact* method.

Appendix E provides complete IOR results. The average IOR for all three staff participants was 91.95% for making announcements, 91.68% for an action which was not preceded by an announcement, 100% for looking away, 91.14% for direct contact, and 91.06% for *Body to Limb Contact*. IORs were completed on 24% (9/38) of the client observation sessions. The client IOR values for smiling was 87.80%, laughing 100%, talking excitedly 90.17%, and complaining 100%. No observations for either observer indicated crying or self-injurious behaviours.

Results

Staff Observations

Following MPDSP training, all three participants showed a mean increase in announcements prior to engaging in care with the client, a mean decrease in looking away from the client or activity, and a mean increase in *Body to Limb Contact*.

Visual inspection of graphed data. According to Kazdin (2011), four visual inspection criteria are typically used in single case research designs to infer an experimental effect. The first two criteria are related to the magnitude of the change and the last two are related to the rate of change. The first criterion is that mean behaviour measurements differ across phases. The second criterion is a clear change (a drop or a jump) in behaviour level at the point of phase change

(Very strong evidence is given if the first two criteria are met such that there are few overlapping data points across phases.) The third criterion is that any trend in the data (typically observed as the slope of a line) differs across phases; a related point is that the trend before a phase change should not be in the direction of the behaviour level that is observed in the following phase. The latter application of criterion three is especially relevant to the present study, because the intervention phase (i.e. post-training) did not present a sustained contingency: it was a one-time training session. The fourth criterion is that change in behaviour levels across phases occurs within the first few sessions following a phase change.

Announcing actions. Figure 1 displays the effects of MPDSP training on announcing actions for all participants. Multiple observation sessions often occurred on a single day (hundreds of sessions in total), Figure 1 aggregates the observation sessions that occurred each day for each staff to better summarize the results. All three participants had an increase in announcements following their MPDSP training as seen in Figure 1.

Participant 1 announced her actions on 29.51% of appropriate occasions (i.e. the mean of all baseline data points) before the MPDSP training, and on 48.79% of appropriate occasions after the training. Announcements during the follow up phase decreased to 29.34%. Visual inspection of Figure 1 showed that criteria 2 (phase change discontinuity), 3 (no pre-training trend in the direction of observed change) and 4 (low latency to change) were also met. Participant 1 returned to baseline levels of announcing her actions in the follow-up phase.

Participant 2 announced her actions on 37.45% of appropriate occasions before the MPDSP training, and on 73.47% of appropriate occasions after the training. Announcements during the follow-up phase decreased to 46.93%. Visual inspection showed that criterion 2 was not met: announcements did not increase until the 2nd session following training. Criteria 3 and

4 were met, and very few data points overlapped between phases. Participant 2 returned to baseline levels of announcing her actions in the follow-up phase.

Participant 3 announced her actions on 43.47% of appropriate occasions before the MPDSP training, and on 83.25% of appropriate occasions after the training. Announcements during the follow-up phase increased to 86.81%. Visual inspection showed criterion 3 may not have been met: announcements displayed an increasing trend prior to training. Criteria 2 and 4 were met, however, and no data points overlapped between phases. Participant 3 remained at a high level during the follow-up phase.

Looking away. Figure 2 displays the effects of MPDSP training on looking away from the client or task during care activities for all staff participants. Figure 2 aggregates the observation sessions that occurred each day for each staff to better summarize the results. Looking away decreased for all three participants following their MPDSP training.

Participant 1 looked away from the client or task during 1.33% of the observation intervals (i.e. the mean of all the baseline data points) before the MPDSP training and during .27% of intervals following the MPDSP training. During the follow-up phase the average decreased further to .22%. Visual inspection of Figure 2 showed that criteria 3 (no pre-training trend in the direction of observed change) and 4 (low latency to change) were also met. Participant 1 continued to improve (i.e. reduce) looking away behaviour during the follow-up phase.

Participant 2 looked away from the client or task during .23% of the observations before the MPDSP training and during .11% of the observations following the MPDSP training. During the follow-up phase the average decreased further to .002%. Although Participant 2 showed a difference in means between phases, looking away was near zero both before and after training,

and little evidence of a training effect is seen in Figure 2. Participant 2 continued to improve looking away behaviour during the follow-up phase.

Participant 3 looked away from the client or task during .71% of the observations before the MPDSP training and during .14% of the observations following the MPDSP training. During the follow-up phase, their average decreased further to .08%. Although Participant 3 showed a difference in means between phases, the other criteria do not appear to have been met: the two data points prior to training were at zero, and the pre-training baseline trend was in the direction of the observed change. Participant 2 continued to improve looking away behaviour during the follow-up phase.

Body to limb contact. Figure 3 displays the effects of MPDSP training on *Body to Limb Contact* for all participants. Similar to Figures 1 and 2, Figure 3 aggregates the observation sessions that occurred each day for each staff to better summarize the results. *Body to Limb Contact* behaviour increased for all three participants.

Participant 1 used *Body to Limb Contact* on 6.36% of appropriate occasions (i.e. the mean of all baseline data points) before the MPDSP training, and on 18.29% of appropriate occasions after the training. *Body to Limb Contact* during the follow up phase increased to 40.82%. Visual inspection of Figure 3 showed that criteria 2 (phase change discontinuity), 3 (no pre-training trend in the direction of observed change) and 4 (low latency to change) were also met. Data points showed also showed minimal overlap across phases. Participant 1 continued to improve in the follow-up phase.

Participant 2 used *Body to Limb Contact* on 7.74% of appropriate occasions before the MPDSP training, and on 26.64% of appropriate occasions after the training. *Body to Limb Contact* during the follow-up phase decreased to 21.33%. Although Participant 2 showed a clear

difference in means between phases and few overlapping data points, assessment of the other criteria was made more difficult by the fact the highest baseline data point occurred immediately prior to training. Nevertheless, criterion 3 was met (no pre-training trend in the direction of observed change). Participant 2's *Body to Limb Contact* decreased to near-baseline levels in the follow-up phase.

Participant 3 used *Body to Limb Contact* on 15.10% of appropriate occasions before the MPDSP training, and on 36.23% of appropriate occasions after the training. *Body to Limb Contact* during the follow-up phase increased to 41.82%. Although Participant 3 showed a clear difference in means between phases, the other visual criteria do not appear to have been met. Participant 3's *Body to Limb Contact* continued to increase in the follow-up phase.

Care activities. The data collected were further analyzed in terms of the care activities performed by staff. The care activities were an uncontrolled variable in that the researchers could not set the proportions of activities performed during pre- and post-training. Figure 4 shows the care activities observed for Participant 1: helping the client eat and the joint behaviours of brushing the client's teeth and using the hoyer lift to get the client into and out of their wheelchair. Brushing the client's teeth and using the hoyer lift to get clients into bed were always observed together because there was insufficient time to start a new observation session between the two care activities. Participant 1 had an increase in announcements as well as a decrease in staff looking away from the client or activity for both care activities following the MPDSP training. Participant 1 showed an increase in using the *Body to Limb* technique while the staff was brushing the client's teeth and using the hoyer to get the client into bed but there was no change while feeding the client.

The care activities observed for participant 2, as shown in Figure 5, included: administering medication through the client's feeding tube and connecting food to the tube; providing medication orally through various types of puddings, apple sauces, and syrup; administering eye drops or nose spray; having extended contact with a client while applying cream or measuring blood pressure; and administering medications that are inhaled. The percent announcements increased for all care activities. There was a decrease in percent looking away for three care activities, administering medication or food through a tube feed and connecting the tube feed to the client; administering medication orally to clients; and applying cream or measuring blood. Looking away did not change for participant 2 during administering eye and ear drops and administering medication through the client's airway. Four of the five care activities showed an increase in *Body to Limb Contact* for participant 2: connecting the feeding tube and administering food and medication through the tube; administering medication; applying cream/measuring blood pressure; and administering medication through the client's airways. There was a decrease in *Body to Limb Contact* for the care activity of administering eye/ear drops.

The care activities observed for participant 3, as shown in Figure 6, included: moving a client by using a one person lift technique or using a hoyer lift; brushing a client's teeth and hair; helping a client eat; brushing teeth and shaving (these were always observed together due to insufficient time to start a new observation session between the two care activities); and waking the clients up. This staff member would engage in activities like opening the blinds, rubbing the client's back, and turning on the lights to wake the client up. The percent announcements increased for all care activities.

Participant 3 had variable results for looking away while providing care to their client. The care activities of brushing client's teeth/hair and helping their client eat both decreased and moving a client by using a one person lift technique or using a hoyer lift increased. Brushing client's teeth/shaving and waking clients up both had no change following the MPDSP training.

Participant 3 displayed an increase for four of the five care activities for *Body to Limb Contact* and a slight decrease for one. There was an increase in *Body to Limb Contact* for using the hoyer or lifting clients in or out of their wheel chair, helping clients eat, waking clients up and the combined behaviours of brushing teeth and shaving. There was a slight decrease for brushing the client's hair/teeth.

Client Observations

Participant 3 and the client participant had 38 shared observation sessions, 17 sessions prior to the staff training and 21 following the training. Four client behaviours (smiling, laughing, talking excitedly, and complaining) were observed both pre- and post-training. Two other behaviours (crying and self-injurious behaviour) were identified in consultation with staff but were not observed during any observation session.

Mean percent intervals with smiling decreased from 28.91% before training to 18.37% after training. Mean percent intervals with laughing increased from .25% before training to .40% after training. Mean percent intervals with talking excitedly increased from 60.56% before training to 62.61% after training. Mean percent intervals with complaining decreased from 2.17% before training to .63% after training. Figure 7 displays percent intervals for each behaviour in each observation session. No visual inspection criteria (aside from small differences in means) were met; MPDSP training for staff did not appear to affect the observed client behaviours.

MPDSP Questionnaire

During the follow-up phase, staff participants completed a questionnaire about their training and the prospect of additional mindfulness training. Two of the three participants rated the goal of MPDSP (to promote intent, communication, and awareness for caregivers) as extremely important and extremely relevant to their work on a 5-point Likert scale. The third participant indicated the goal was very important and relevant to their work. All three participants agreed that the training procedures were acceptable and indicated the hands-on activities teaching them the goals of the mindfulness program as the most helpful aspect of the training. All three participants said the training improved their communication skills with their clients but only two of the three staff felt client behaviour changed as a result. One of the staff indicated MPDSP reduced their stress at work but none of them felt a reduction in stress at home. Two of the three staff recommended more hands on activities and discussions of additional scenarios in the MPDSP training. All three indicated all staff at St.Amant should take the MPDSP training and two of the three felt a booster should be added to the training.

Discussion

The aims of this study were: (a) to assess the effects of MPDSP training on several target staff behaviours, and (b) to determine whether any changes in staff behaviour affected client happiness and/or unhappiness indicators. All three staff demonstrated a change in behaviour following the MPDSP training. All three showed improvements in announcing their actions and moving from areas of least to most sensitivity when starting a care activity with a client. All three also showed a reduction in looking away from their care activity with their client. Although all three staff showed improvements in the three behaviours observed, not all improvements in

the behaviours were maintained over an extended period. No clear effects were observed on the behaviour of the client participant.

This research has made several notable contributions to the body of mindfulness literature. It's the first study to use repeated direct observations of specific caregiver behaviours to evaluate the effects of a mindfulness program. The mindfulness training used was brief; most studies have involved training that lasted 8 weeks or more. Finally, it's the first evaluation of MPDSP, a program that was designed specifically for caregivers of persons with intellectual disabilities.

The study also had several limitations. Recruitment was difficult, in part because a large proportion of staff members had already received MPDSP when recruitment began. Although there were as many as 11 staff participants who consented to participate in this study, before observations began, many of the staff were scheduled by their supervisors for the training and attended it without informing the researchers. Due to the difficulties in recruitment, the three participants in this study did not begin baseline at the same time but within 20 days of each other.

Recruitment for clients was also difficult and resulted in only one client. The client recruited was able to verbalize when something bothered him. Clients who do not have this ability may engage in challenging behaviours as a way of communicating something they do not like. As many clients served by St.Amant are nonverbal, it would be beneficial to recruit additional clients with limited verbal abilities for the study to evaluate their happiness indicators following staff training. More research should be done to evaluate if staff behaviour change influences client happiness indicators.

The researchers were able to have some input in the timing of staff training; however, they did not have complete control over the scheduling. The researcher's main goal was for staff to receive training consecutively and after all behaviours reached stable levels. Prompting by management to get all staff trained, and restricted training sessions were limitations that played a part in scheduling the participants for the training. Two of the staff had to be rebooked for their training due to extenuating circumstances such as sick calls and being short staffed.

Due to varying schedules of the participants, there were some time gaps between the dates of some of the observations. As data were collected over a 6-month period, all three participants had vacations within that time. Two of the staff members worked part time making it more difficult to avoid gaps between observations. One of the staff members also cancelled several times due to special client activities occurring, being short staffed, and being tired. As this research is dependent on the support of a number of different departments within a facility, management awareness, support, and an effective interdepartmental communication network is crucial. Although a baseline was established, the researchers cannot completely rule out reactivity to the researcher's presence as a factor in the improvement of the staff behaviours.

Informal observations indicated there were large increases in positive reinforcement by the staff to the clients during care activities following the staff training. There also appeared to be an increase in staff talking to their clients regardless of the client's verbal abilities. The staff appeared to discuss every day topics such as what the clients did during the day, the weather, comments on the care activity, etc. Future research should evaluate these items further in a scientific manner to confirm these informal findings.

A booster or secondary training session may be beneficial to extend the positive effects observed and establish if all the desired behaviours could be maintained or improved. Another

aspect of care the booster could highlight is wiping a client's face. This behaviour was involved in many of the staff care activities, and we observed a general trend. All of the staff participants were likely to touch the face directly as opposed to using *Body to Limb Contact* and were less likely to announce wiping the mouth than other care activities. As each participant stated that interactive activities were beneficial during training, a greater focus on wiping the face techniques in relation to announcements and *Body to Limb Contact* might be of benefit.

The present findings have important implications for staff training. This study suggests that MPDSP, though brief, is a valuable mindfulness program for direct care staff. A large number of staff may be trained in short periods of time reducing the cost of implementing programs while potentially creating a better environment for both staff and clients. More generally, the results show that the effects of mindfulness training for caregivers can be evaluated in part through direct observation of subsequent care behaviours. This suggests the possibility of designing future training programs to optimize such outcomes.

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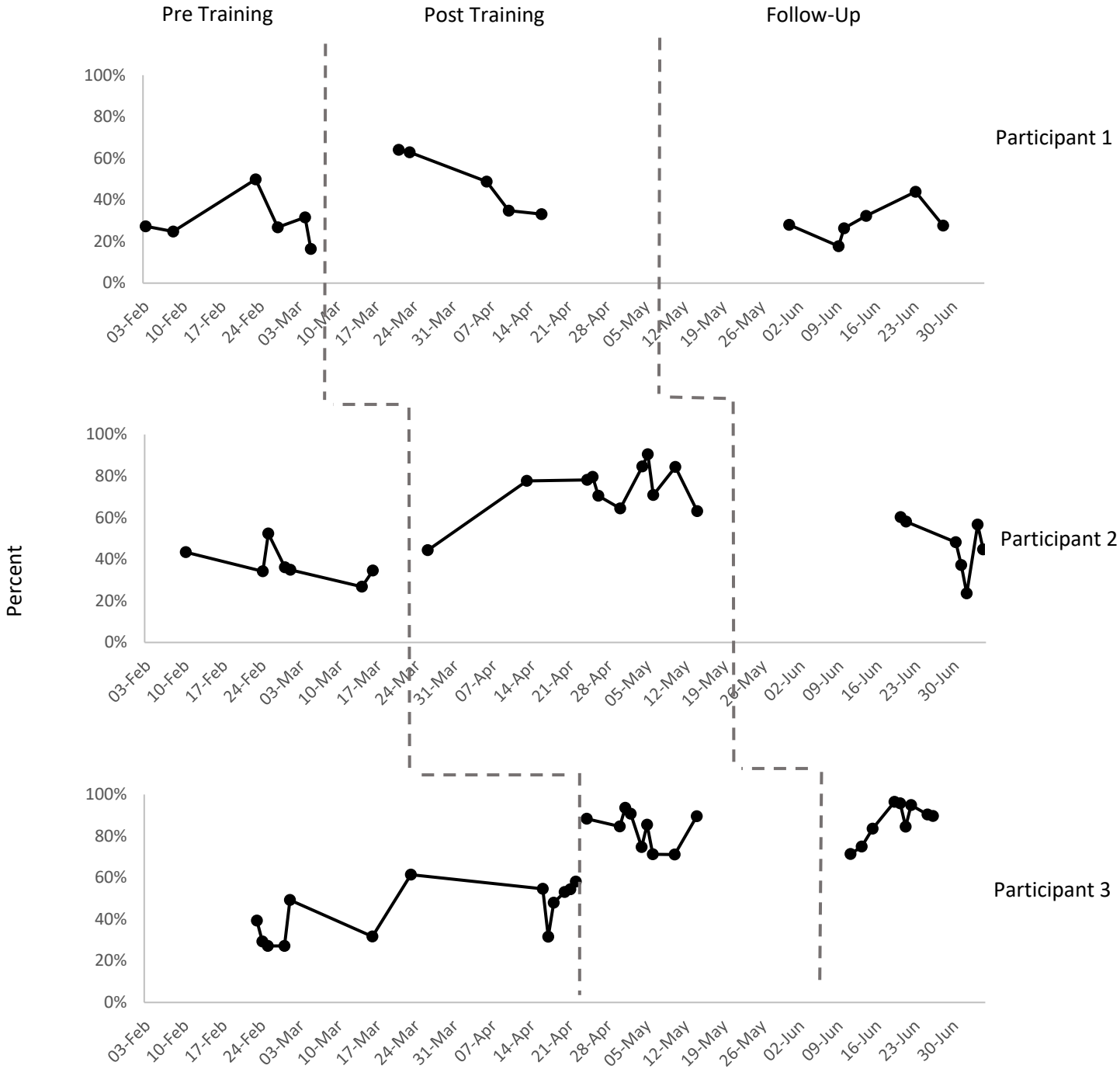


Figure 1. Multiple baseline by participant design. Pre, post and follow-up intervention data for the staff behaviour of announcing their actions prior to acting, including staff participants 1, 2, and 3.

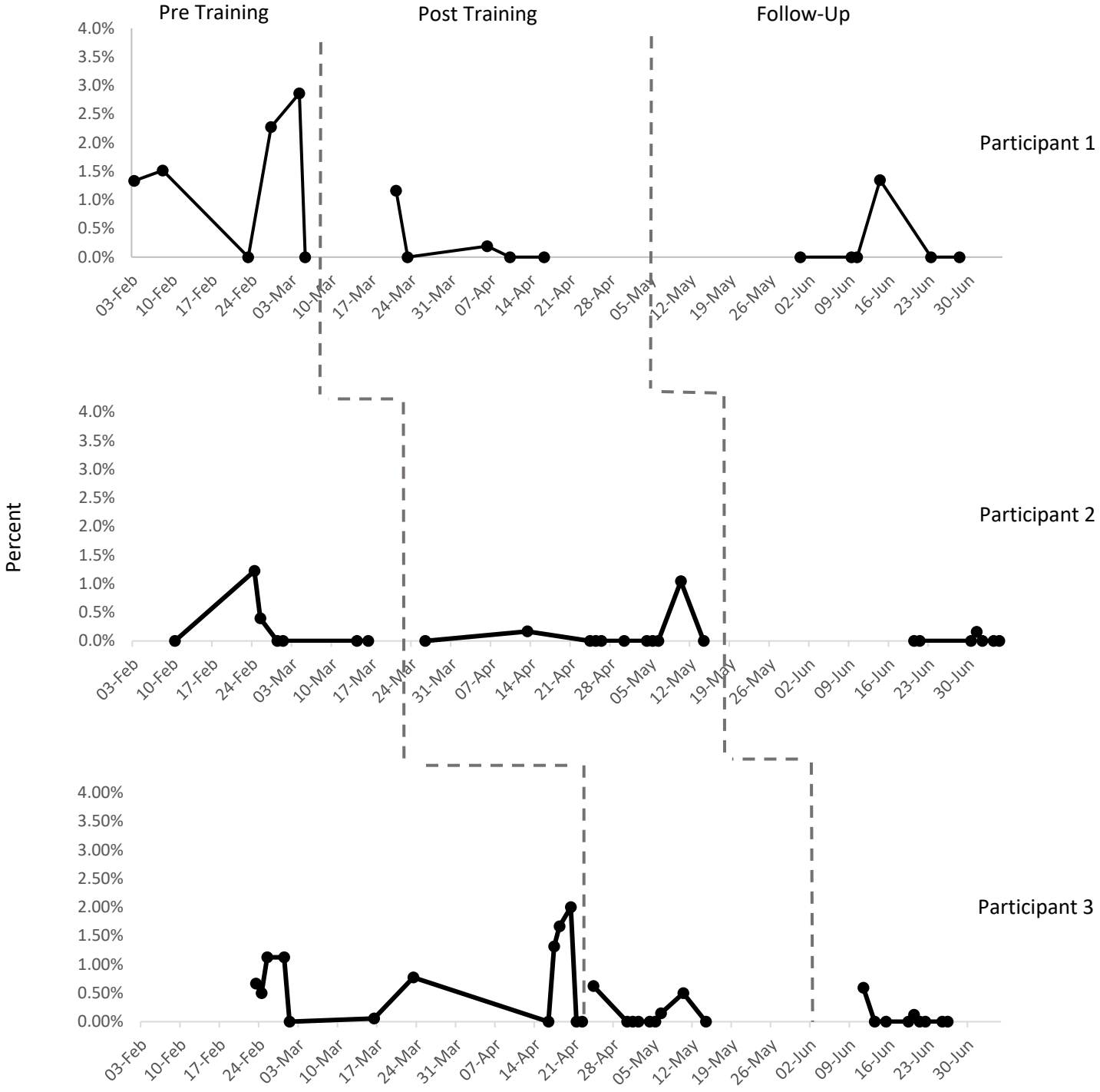


Figure 2. Multiple baseline by participant design. Pre, post and follow-up intervention data for the staff behaviour of looking away from client or task during a care activity, including staff participants 1, 2, and 3.

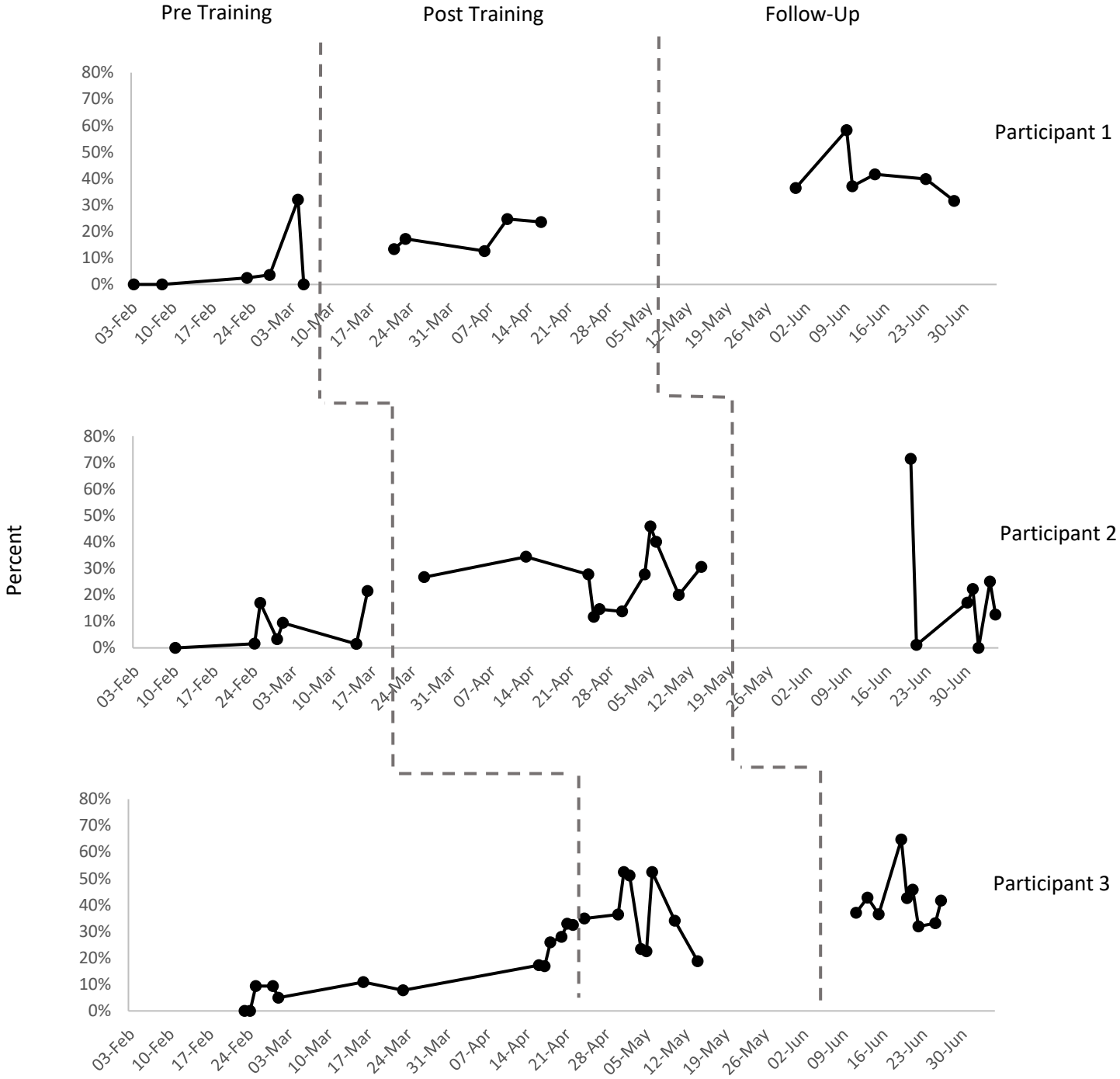


Figure 3. Multiple baseline by participant design. Pre, post and follow-up intervention data for the staff behaviour of *Body to Limb Contact*, moving from an area of less sensitivity to more sensitivity when providing care to clients. This graph includes staff participants 1, 2, and 3.

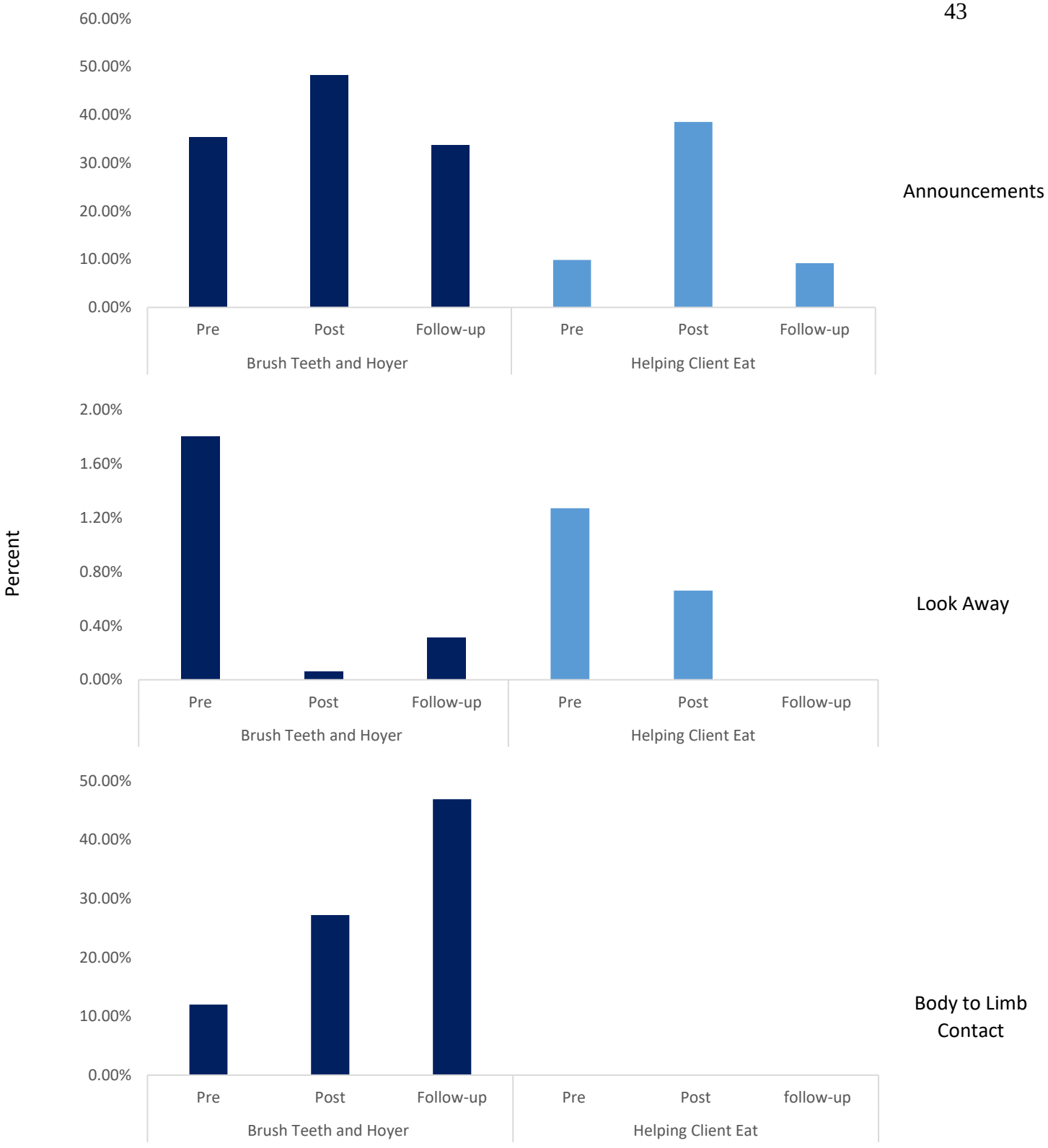


Figure 4. Participant 1 pre, post, and follow-up intervention data for care activities for each staff behaviour, Percent Announcement, Percent Look Away, and *Body to Limb Contact*.

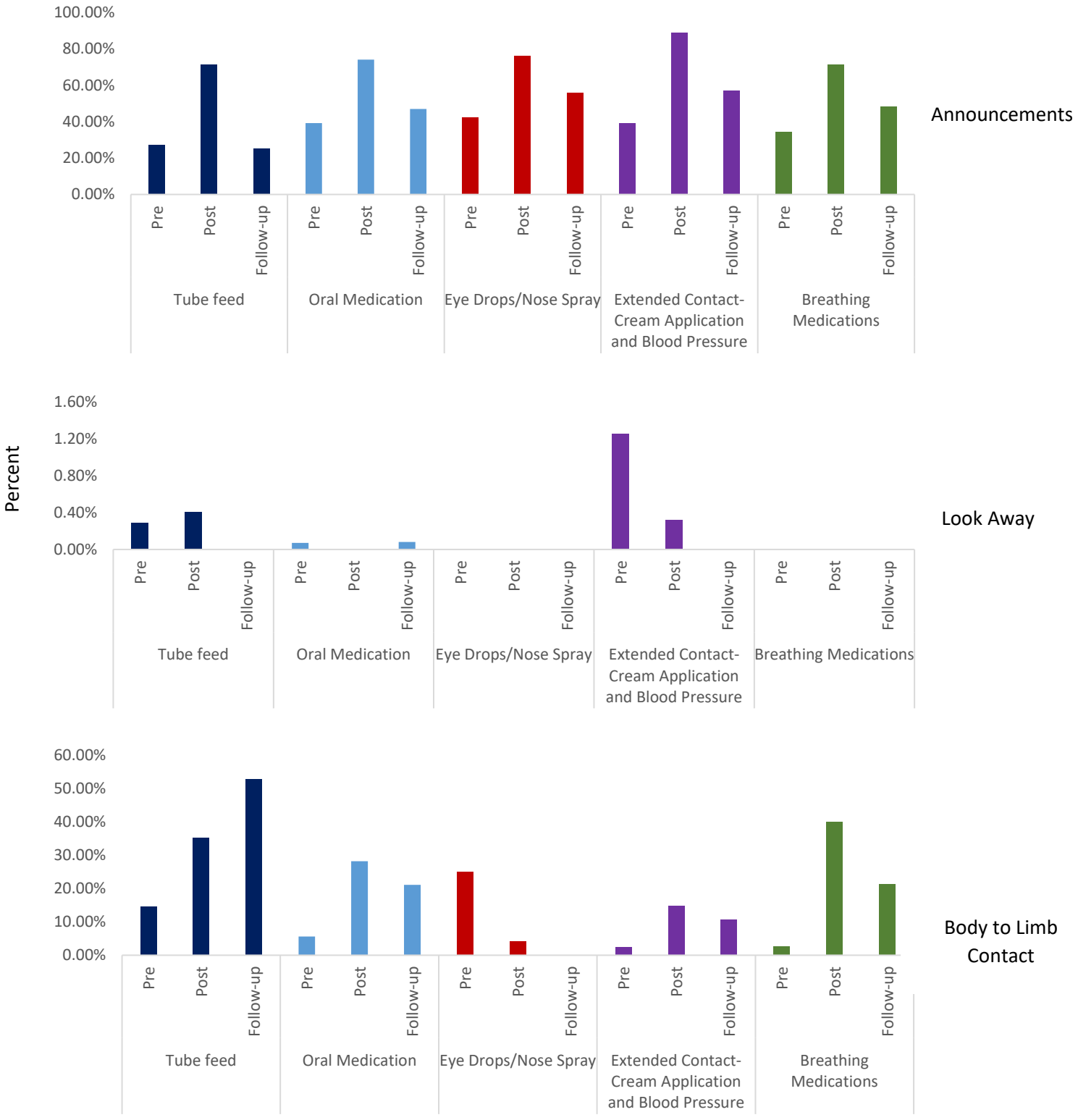


Figure 5. Participant 2 pre, post, and follow-up intervention data for care activities for each staff behaviour, Percent Announcement, Percent Look Away, and *Body to Limb Contact*.

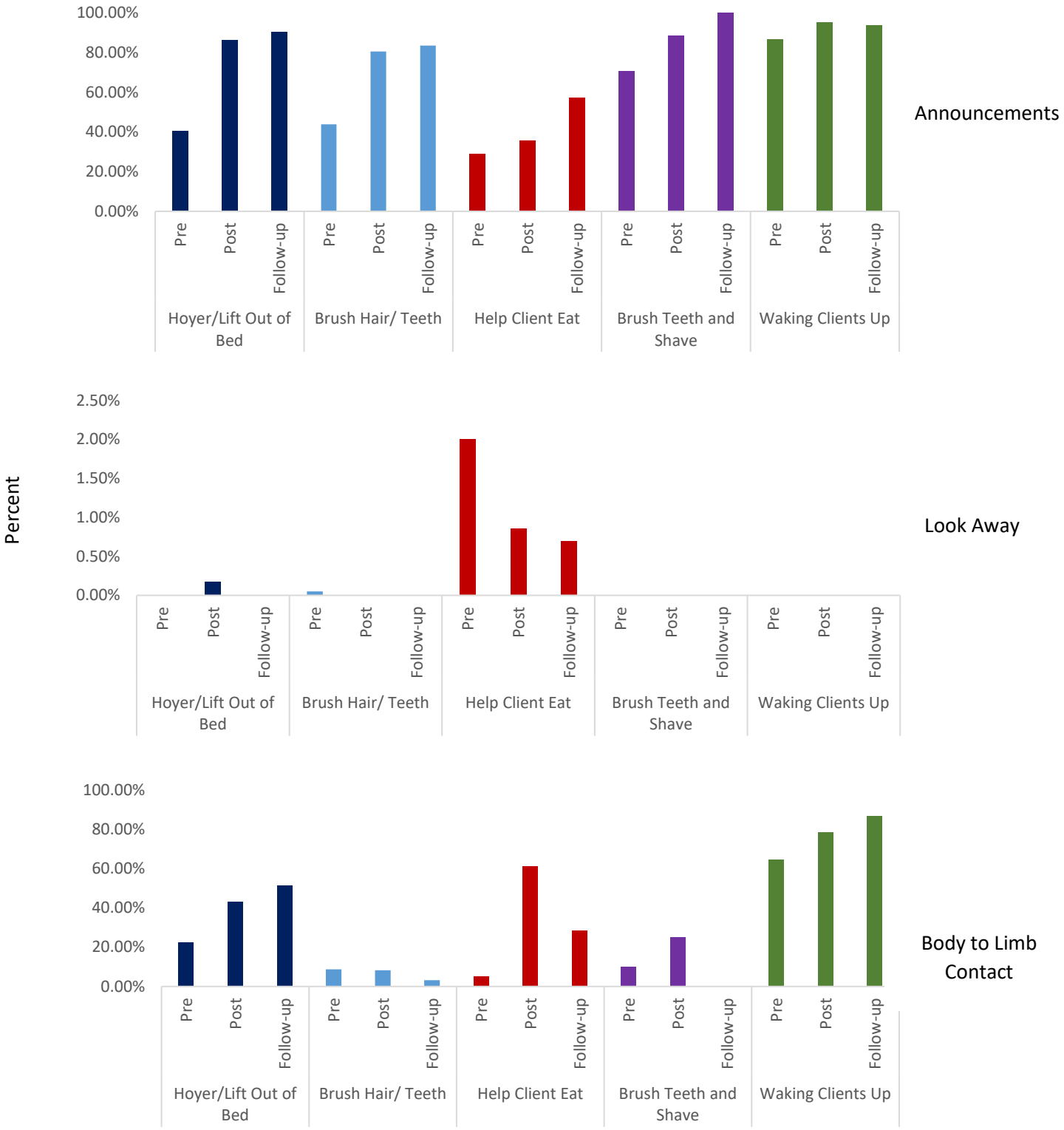


Figure 6. Participant 3 pre, post, and follow-up intervention data for care activities for each staff behaviour, Percent Announcement, Percent Look Away, and *Body to Limb Contact*.

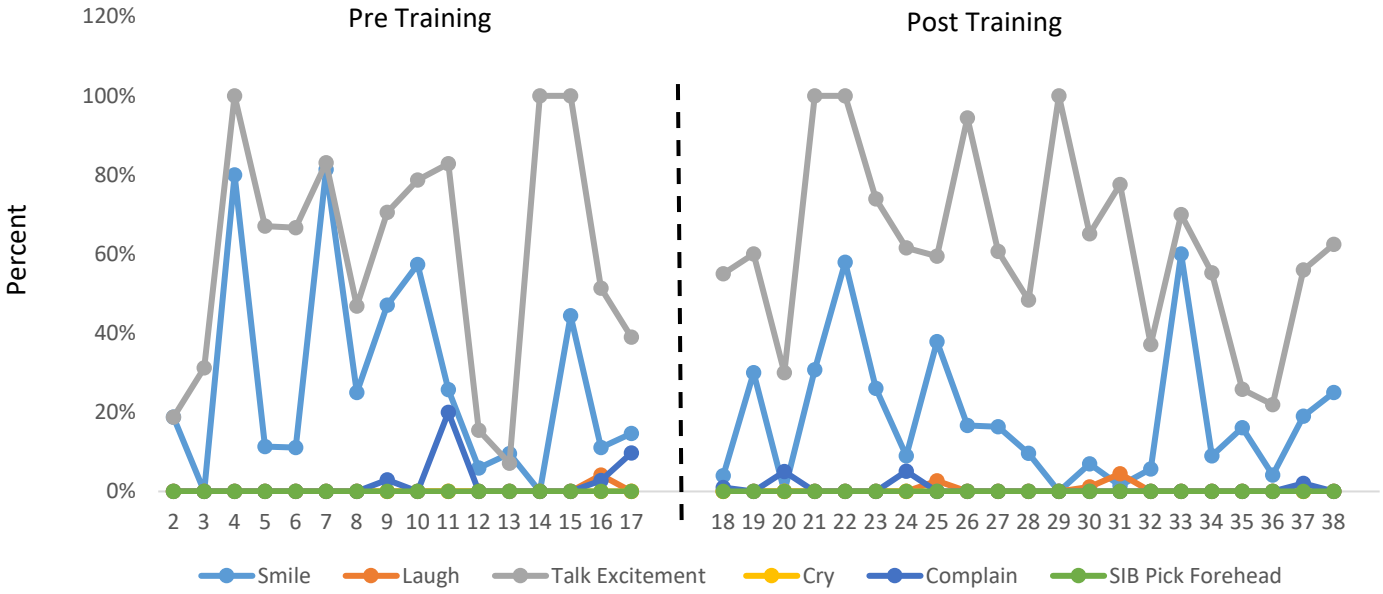


Figure 7. Client participant pre-post intervention data for happiness/unhappiness indicators of smiling, laughing, talking excitedly, crying, complaining, and self-injurious behaviour (SIB) of picking their forehead.

Appendix A
Summary of MPDSP

- Introduction of the MPDSP training session which includes:
  - Introduction to mindful practice
  - Experience of a support receiver
  - The guiding principles of mindful practice- intent, communication and awareness
  - Application of mindfulness
- Definition of mindfulness.
- Where do you see mindfulness at work?
- Blindfold Activity. Staff provide “care” without announcing intent while the “client” is wearing a blindfold.
- Discussion of the activity. What was it like to be the staff, and what was it like to be the client? Break it down into different stimuli such as touch, sound, visual, smells, tastes, movement.
- Discussion of the "homunculus." Certain areas of the body are more sensitive than others, and staff should be aware of this as they consider the stimuli and sensations clients feel in their environment.
- Discussion of what it is like to be a client receiving care. For example, being touched during care experiences, the fact that it could be a stranger providing the care, etc.
- Video by Miguel Jiron: "Sensory Overload." This video demonstrates what it is like to have a sensory overload in which everyday sensations could become overwhelming.
- Discussion of stress and how it impacts the body. If the client’s body reacts to care experiences with rest and digest or fight or flight. What the difference is and what impact it has on the client.
- Video interview with a person with cerebral palsy about his care experience and how it affects him.
- Discussion on stress and how one might cope with stress.
- How staff can help reduce client stress.
- How oxytocin plays a role in client behaviour and how to increase levels of oxytocin for clients to improve their wellbeing.
- Sensory Audit. What are the senses and where does sensation come from? How to do a sensory audit, and what to do after the sensory audit.
- What are the benefits of mindfulness?
- The three guiding principles of mindful practice: intent, communication and awareness.
- How do the principles relate to actions at work?
- Blindfold Activity. Staff provide “care” to a “client” while using the 3 guiding principles. They announce intent, narrate their intentions, and create a calm comfortable environment through a sensory audit and providing comfort.
- Activity discussing everyday situations and what to do in each to ensure you are applying mindful practice at work.
- Summary of the training and the take home message.





Appendix B
Client Specific Behaviours

Happy behaviours may include:

1. Smile
2. Laugh/Giggle
3. Yell with smiling
4. Happy vocalizations
5. Body shaking
6. Large head movements
7. Hopping in chair
8. Moving arms
9. Finger/hand movements
10. Dancing
11. Singing / Humming
12. Pat someone on the back, head, or any other parts of the body
13. Clap
14. Other: _____

Unhappy behaviours may include:

1. Cry
2. Frown
3. Unhappy vocalizations
4. Avoiding eye contact
5. Pacing
6. Face turning red
7. Teeth clenching / grinding
8. Other: _____

Challenging behaviours may include:

1. Yell without smiling
2. Self-injurious behaviour
    i. (circle all that apply:
    ii. biting hand /
    iii. hitting head against the wall, floor, or objects /
    iv. hitting themselves in the head or face)
3. Aggressive behaviour towards others
    a. (circle all that apply:
    b. punching / biting / pulling their hair or clothes / pinching / kicking / throwing objects towards them)
4. Throwing objects
5. Grabbing objects and not letting them go

    a. (Please specify: _____)
6. Other: _____

Appendix C
Background Questionnaire

Name:

Background:

1. What is your position at St.Amant?

2. What is your education level? (Circle)
   - High school
   - University/college certificate
   - Trade/apprenticeship qualification
   - Other (please describe)

3. How old are you? (Circle)
   - 18-25
   - 26-35
   - 36-45
   - 46-55
   - 56-up

4. How long have you worked at St.Amant? (Circle)
   - 1-6 months
   - 6 months-1 year
   - 2 years
   - 3 years
   - 4 years and up

5. How long have you worked in this industry? (Circle)
   - 1-6 months
   - 6 months-1 year
   - 2 years
   - 3 years
   - 4 years and up

6. Is English your first language? (Circle) **YES** **NO**
   a. If not, what is?

Mindfulness:

7. Do you know what mindfulness is? (Circle) **YES** **NO**
    a. If so what does it mean to you?

8. Have you ever read a book on mindfulness? (Circle) **YES** **NO**

9. Have you previously been involved in a mindfulness session or program? (Circle)
    YES **NO**
    a. If so what?

10. Do you mediate? (Circle) **YES** **NO**
    a. If so how often?
    b. How long have you been practicing meditation?

11. Do you try to apply mindfulness in your everyday life? (Circle) **YES** **NO**
    a. If yes how?

12. How do you use mindfulness at work?

13. Do you try to apply mindfulness in your interactions when working directly with clients? (Circle)
    YES **NO**
    a. If so how?

Appendix D
Baseline Mindfulness Description

What is Mindfulness?

Mindfulness means to be present in the moment, on purpose and non-judgmentally. This includes being aware of our thoughts, emotions and how we interact with others. We do so without judgment of ourselves or of our experience.

Being mindful in a support or care practice means being engaged and aware of our own experience as well as our client's experience. This may include sights, sounds, smells, tastes and movements as well as the impact of our communication and physical contact with the client. It also includes our awareness of the immediate environment and how it affects our client and us. Minimizing discomfort or distraction in the support experience is important for our own comfort as well as our client's, especially during personal, intimate care experiences.

St.Amant is committed to support experiences that nurture the well-being of both those who receive support and those who provide support. Mindfulness can also be applied to various areas in our life beyond work including but not limited to our relationships, hobbies and self-care, all of which contribute to our own well-being.

UNIVERSITY OF MANITOBA

Appendix E

Mindful Practice for Direct Service Providers Questionnaire

Dear Staff Member:

My name is Jessica Summers and I am a Master's Student in the Psychology Department at the University of Manitoba. I am conducting a study titled, *Does a staff mindfulness program improve quality of care for persons with developmental disabilities?* The purpose of this study is to evaluate the effectiveness of *Mindful Practice for Direct Service Providers* (MPDSP).

This letter is to ask for your consent to answer a few questions about your experience with the MPDSP training and your opinion about mindfulness training at St.Amant. Answering these questions will have no impact on your employment at St. Amant.

Your participation is voluntary in a sense that you are free to answer or not answer the questions as you choose. Answering these questions indicates that you have understood the information regarding your participation in the research project.

This research has been approved by the Psychology/Sociology Research Ethics Board. If you have any concerns or complaints about this project, you may contact the Principal Investigator, Jessica Summers or the Human Ethics Coordinator (HEC). A copy of this consent form has been given to you to keep for your records and reference.

The goal of MPDSP is to promote intent, communication, and awareness for caregivers.

1. How important is this goal? (Circle)

Extremely Important	Very Important	Important	Not Very Important	Not Important

2. How relevant is it to your work? (Circle)

Extremely Relevant	Very Important	Relevant	Not Very Relevant	Not Relevant

3. How acceptable were the training procedures used in MPDSP (e.g. in terms of time or effort required, or anything else)?

_____

_____

4. What parts of the MPDSP training did you find most helpful?

_____

_____

5. How has the training made a difference in providing care to your clients?

_____

_____

6. Do you think your experience with MPDSP has changed the way that your clients react to the care you provide?

YES NO

If so, how?

_____

_____

7. Do you think the training has reduced your stress at work?

   YES NO

   At Home?

   YES NO

8. Are there any changes or additional information you would like to see for the MPDSP training?

   _____

   _____

9. If St.Amant developed an additional MPDSP training session for staff who attended the first session, what should be included in that 2nd session?

   _____

   _____

10. Do you think all St.Amant staff should take the MPDSP training?

    YES NO

11. Do you think all St.Amant staff should attend a 2nd MPDSP session?

    YES NO

Appendix F

IOR Calculation Values

Participant1:
Announcements
Intervals behaviour: 90.28%
Intervals no behaviour: 99.49%
Total:99.73%

Action
Intervals behaviour: 89.90%
Intervals no behaviour: 97.78%
Total:96.46%

Look Away
Intervals behaviour: 100%
Intervals no behaviour: 100%
Total: 100%

Direct Contact
Intervals behaviour:88.96%
Intervals no behaviour:99.04%
Total:98.08%

Contact body to Limb
intervals behaviour:85.46%
Intervals no behaviour:99.82%
Total:99.36%

Participant 2:
Announcements
Intervals behaviour:91.67%
Intervals no behaviour:99.35%
Total:98.46%

Action
Intervals behaviour:92.67%
Intervals no behaviour:99.13%
Total:98.37%

Look Away
Intervals behaviour:100%
Intervals no behaviour:100%
Total:100%

Direct Contact
Intervals behaviour:92.56%
Intervals no behaviour:99.13%
Total:98.37%

Contact body to Limb
Intervals behaviour:100%
Intervals no behaviour:100%
Total:100%

Participant 3:
Announcements
Intervals behaviour:93.91%
Intervals no behaviour:99.32%
Total:98.60%

Action
Intervals behaviour:92.46%
Intervals no behaviour:99.14%
Total:98.57%

Look Away
Intervals behaviour:100%
Intervals no behaviour:99.98%
Total:99.98%

Direct Contact
Intervals behaviour:91.90%
Intervals no behaviour:99.16%
Total:98.59%

Contact body to Limb
Intervals behaviour:87.71%
Intervals no behaviour:99.66%
Total:99.27%

IOR Calculation Values

Client:

Smile

Intervals behaviour: 87.80%

Intervals no behaviour: 99.07%

Total: 98.26%

Laugh

Intervals behaviour: 100%

Intervals no behaviour: 100%

Total: 100%

Talk excited

Intervals behaviour: 90.17%

Intervals no behaviour: 95.91%

Total: 93.58%

Cry

Intervals behaviour: 100%

Intervals no behaviour: 100%

Total: 100%

Self-injurious behaviour

Intervals behaviour: 100%

Intervals no behaviour: 100%

Total: 100%