Improving Staff Capacity to Form and Facilitate Relationships for People with Severe Intellectual Disability: 'It's a Slow Process'

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Abstract

Background

The social relationships model was previously developed to enhance positive relationships between direct support staff and people with intellectual disability.

Aims and Method

The study aim was to evaluate whether an intervention based on the relationship model would lead to change in the frequency of social interaction, and the nature of the relationship between direct support staff and people with severe intellectual disability.

The educational intervention was developed and delivered over 4-6 hours. It covered each of the model's four relationship processes: recognising individuality, sharing the moment, connecting, and sharing the message.

Participants were 5 service users from 3 day services, and 6 from 3 group homes, with severe-profound intellectual disability (average ages 40 and 50 years, respectively); and 18 staff from each setting. Social interaction and relationship processes between staff and service users were measured through observations using the PEARSmts, with intervention effects tested using a Multiple Baseline Design. Descriptive field notes and staff interviews provided complementary qualitative data and a survey tool (SCIBI) and the staff interviews evaluated attitudinal changes.

Findings

There were positive changes to the frequency of social interaction and the nature of the relationship between direct support staff and people with severe intellectual disability. Overall relationship processes, staff contact and service user engagement were infrequent and variable. There were however, positive changes for individuals: a high effect for 1 service user, and a minimal effect for 4 others for relationship processes; minimal effects for staff contact and assistance for 6 service users and for engagement for 4. SCIBI scores showed little change, but changes to staff practices and attitudes following the use of the intervention tool were evident in the qualitative data.

Recommendations

Recommendations were to (1) continue to refine the relationships measurement tool for further research; (2) development of organisational strategies that reinforce staff understanding that social interaction with service users and support for engagement are central to their role; (3) expand the educational intervention to include mentoring, staff reflection, practice leadership, and conceptual links to a person centred practice framework and to other training; and (3) develop a training kit with audio visual resources.

Executive Summary

Background

People with intellectual disability, especially those with severe disability, experience difficulties in forming social relationships, which are key to their social inclusion as well as their health and wellbeing. People with severe intellectual disability are particularly reliant on direct support staff, who comprise a large part of their social networks. Unfortunately, direct support staff spend little time on developing social relationships with the people they support, and have difficulty in recognising and responding to their communication. In order to further understanding of social relationships between direct support staff and people with intellectual disability, a social relationships processes model was developed in a previous qualitative study. This relationships model provides a characterisation of the interactions and behaviours that support the formation and maintenance of positive relationships, and exemplifies real world contextualised practices that can be introduced as part of everyday interactions. The model provides a means for teaching others how to develop and sustain positive relationships with people with severe intellectual disability.

Aims and Method

The aim of the study was to develop an educational intervention, based on the social relationships processes model, and test its effectiveness in increasing the capacity of direct support staff to understand, develop and facilitate relationships with people with severe intellectual disability, both with themselves as staff and with others in the community. The study also provided the opportunity to develop an observational measure of positive engagement and relationships based on the model. The research question was:

> Does an intervention based on the relationship model lead to change in the frequency of social interaction, and the nature of the relationship between direct support staff and people with severe intellectual disability who are users of day and accommodation services?

The educational intervention was delivered over 4-6 hours in interactive sessions based on adult learning principles. The content focused on information and discussion around each of the four relationship processes from the model: recognising individuality, sharing the moment, connecting, and sharing the message. Staff completed work sheets and a commitment sheet, and were given a copy of a schematic of the model.

Day services participants were 5 service users (2 from two services, and one from the remainder), with an average age of 40 years, with severe or profound intellectual disability, and little or no speech, but intentional communication. Eighteen day services staff participated in all aspects of the study. Group home participants were 6 service users (2 from each home), with an average age of 50 years, and similarly had severe or profound intellectual disability, and little or no speech, but intentional communication. Eighteen day group home staff participated in all aspects of the study.

Mixed methods were used to evaluate the educational intervention. Quantitative and qualitative data were of frequencies of social interaction between staff and service users and the nature of their relationships, and changes to these as a result of the educational intervention. An experimental single case design - Multiple Baseline – was implemented in 3 day services and 3 group homes. The strength of this type of design is in demonstrating intervention effects at the level of the individual, thereby indicating the potential practical relevance of findings Structured observational data were collected on staff interactions and practices, and service user engagement. A tool designed for the study was used to collect quantitative observational data according to a momentary time sampling approach (PEARSmts). Unstructured descriptive field notes written during and directly after observations were used to collect complementary qualitative data about staff interactions and relationships with service users and the context of their practice. Additional data were collected on staff attitudes using an established measure – the Staff-Client Interactive Behavior Inventory (SCIBI), and interviews were conducted with staff before and after the intervention to gain an understanding of the different disability work environments and explore further the nature of staff-service user relationships.

Findings

The quantitative data showed variable and overall low scores across relationship processes, as well as staff contact and assistance, and service user engagement. Even so, the quantitative data about relationship processes showed a high effect for 1 day program service user, and a minimal effect for 4 other service users. The data suggested that sharing the moment and connecting were the most prominent of the relationship processes. This may have been attributable, at least in part to what was best captured using the PEARmts. Sharing the moment was characterised by banter in both settings, but hanging out also occurred. In terms of staff contact and assistance, and engagement, a high effect was found for the same day service user who showed the most change for relationship processes. Minimal effects were

found in respect of staff contact and assistance for 6 service users and in respect of engagement for 4 service users. Little change in staff attitudes from before to after intervention was evident on the SCIBI, with day services staff showing a more positive emotion in relation to critical expressed emotion. No changes were evident for group home staff.

The qualitative data provided descriptive evidence of some changes to staff practices and attitudes about relationships with service users following the training. These changes suggest the use of the relationship model in training had a positive effect. Importantly, the qualitative data highlighted some of the benefits for both staff and service users of improving relationships and increasing social interaction between them - staff gained increased satisfaction and service users became more engaged in their social world. Staff reported that the training gave them permission to feel comfortable spending time together either by watching the TV or bringing the person closer to do joint activities.

Recommendations

1. As this study was the first to attempt to measure relationship processes, further research be undertaken with modifications to the PEARmts to improve the strategy for recording data about sharing the message to ensure all elements of the model are captured.

2. Organisations develop strategies to ensure staff understand that social interaction with service users and enabling their engagement are central to their role. This may be achieved through strategies to ensure the espoused values of organisations are modeled by managers, by managers, at all levels, understanding what good practice looks like and undertaking regular observation of staff practice, regular performance reviews for all staff and embedding opportunities for staff to develop interaction skills in training calendars.

3. The educational intervention be expanded to incorporate; staff time to reflect on their practices and relationships with service users, individually and during staff meetings, and follow up mentoring by the trainer; ongoing supervision, coaching and modelling by organisational practice leaders; clear links to an overarching person centred practice framework.

4. A training kit be developed that aligns the revised positive relationship educational intervention with other person centred training, such as active support, including online resources with examples of good practices.

Background

Since the mid-1990s, the concept of social inclusion has been central to disability policy in Australia and internationally. All persons, irrespective of their degree of impairment or appearance, have a right to be part of the community and the support necessary for participation. This right is reflected in the principle of "full and effective participation and inclusion in society" of the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD, 2008; Commonwealth Government, 2010). Social relationships were identified as central to social inclusion by O'Brien (1987), who made the distinction between *community presence* - the use of facilities or services in the community available to everyone, and *community participation* - being part of a growing network of relationships that includes people with and without intellectual disability. More recently, the Australian Social Inclusion Board (2009) identified the nature of an individual's social relationships as an important indicator of social inclusion.

Relationships have been recognised as one of the social determinants of health and wellbeing in both the research literature (Argyle, 2001; Duck, 1998) and Australian disability policy (Commonwealth Government, 2010). They provide affective and instrumental social support, personal connectedness and social value, and act as a protective factor, associated with better physical and psychological health (Acheson, 1998; Bayley, 1997).

A large body of research has demonstrated that despite their increased community presence, people with intellectual disability continue to be socially excluded, have very few social relationships, and their social networks comprise primarily staff, family members and other people with intellectual disability (Bigby, Knox, Beadle-Brown, Clement, & Mansell.2012; Kozma et al., 2009; Walsh et al., 2010). Findings from the few studies in which people with intellectual disability have been differentiated on the basis of severity have shown that those with more severe impairment or complex needs have been particularly disadvantaged, as demonstrated by having even smaller social networks than those with less severe disability (Kennedy, Horner, & Newton 1989; Robertson et al., 2001).

Understanding and Supporting Relationships

According to the social model of disability, in addition to impairments that may affect capacity to initiate relationships, such as limited communication, the development of relationships is obstructed by social and structural barriers. These barriers include negative social attitudes, and limited opportunities to make social connections with others. People with severe and profound intellectual disability are therefore reliant on skilled support to reduce

the impact of both their impairment and negative social processes on the formation of relationships. Such supports can create positive conditions and facilitate social interactions. However, direct support staff, with whom people with severe or profound intellectual disability regularly interact and who make up a significant portion of their social networks, have little training in facilitating relationships, and often have difficulty forming relationships themselves with the people they support. Direct support staff have been observed to spend little time in social interaction with the people they support (Schepis & Reid, 1994), have difficulty in recognising their nonverbal behaviours (McConkey, Morris, & Purcell, 1999), and demonstrate problems in adjusting their communication style according to individual needs (Purcell, Morris, & McConkey, 1999). There is also some evidence that the attitudes of support staff act as a barrier to fostering relationships: although they have been found to accept principles of inclusion and participation for people with intellectual disability in general, they do not consider it feasible to apply them to people with severe intellectual disability (Bigby, et al., 2009).

Consistent use by staff of person centred active support has been shown to increase the engagement, choice, control and quality of service users with severe intellectual disability (for review see Mansell & Beadle-Brown, 2012). Despite an enabling relationship between a staff member and service user being central to the provision of person centred active support, active support training has not included the processes or skills involved in the formation of relationships. Our research in Victorian services suggests too that largely untrained support workers have been expected to expedite social inclusion with little understanding of what it entails, and with limited resources or guidance (Bigby, Cooper & Reid, 2012; Clement & Bigby, 2010; Johnson, Douglas, Bigby & Iacono, 2012).

In an attempt to develop a greater understanding of enabling relationships for people with severe intellectual disability, a model focussing on key processes in positive relationships was developed by Johnson et al. (2012) using a grounded theory approach. Data were collected through in-depth interviews with paid workers and family members, and extensive observation of interactions with adults with intellectual disability and limited communication (Johnson et al., 2012). The relationship model developed through this process provides a characterisation of the interactions and behaviours that support the formation and maintenance of positive relationships, and exemplifies real world contextualised practices that can be introduced as part of everyday interactions. The model provides a means for teaching others how to develop and sustain positive relationships with people with severe intellectual disability. An outline of the model is provided in Appendix A.

The aim of this study was to translate the relationship model into an educational intervention to increase the capacity of direct support staff to understand, develop and facilitate relationships with people with severe intellectual disability both with themselves as staff and with others in the community. The research offered an opportunity to test an intervention derived from the grounded theory relationship model, as well as develop an observational measure of positive relationships based on the model. The research question was:

> Does an intervention based on the relationship model lead to change in the frequency of social interaction, and the nature of the relationship between direct support staff and people with severe intellectual disability who are users of day and accommodation services?

Method

Design

Mixed methods were used to collect data on the frequency of social interaction between staff and services users and the nature of their relationships, and changes to these as a result of the educational intervention. An experimental single case design - Multiple Baseline (MBL) – was implemented in 3 day services and 3 group homes. Structured observational data were collected on staff interactions and practices, and service user engagement. A tool designed for the study was used to collect quantitative observational data according to a momentary time sampling approach (PEARSmts). Unstructured descriptive field notes written during and directly after observations were used to collect complementary qualitative data about staff interactions and relationships with service users and the context of their practice. Additional data were collected on staff attitudes and behaviour using two established measures (SCIBI and SESQ), and interviews were conducted with staff before and after the intervention to gain an understanding of the different disability work environments and explore further the nature of staff-service user relationships.

Approval was obtained from the Human Ethics Research Committees of La Trobe University and Scope, a Victorian nongovernment organisation.

Educational Intervention

An educational intervention to train staff about the processes and behaviours represented in the relationship model was designed to be delivered in four 1.5-hour sessions over two weeks or two 3-hour sessions over one week. A trainer's work book provided descriptions of key elements of the relationship model, guiding training sessions based on principles of adult

learning and planned to enhance, validate and share current staff knowledge of service users in the study (Bradshaw & Goldbart, 2013; Merriam & Caffarrella, 1999). The sessions were planned to be interactive and organised around practical activities: (a) discussion of each staff member's personal social networks, completion of each service user's social network (from closest relationships to friends, acquaintances and paid network members), and examination of how staff members' own networks differed from the service users they supported; (b) information and discussion around each of the four relationship processes of recognising individuality, sharing the moment, connecting, and sharing the message; (c) completion of a work sheet detailing what each process looked like for each service user; and (d) completing a commitment form that stated what each staff member was going to do to assist a service user have more positive interactions and/or develop more positive relationships. In addition, a colourful, laminated, schematic form of the model was developed, and a copy given to each staff member. The intervention was piloted with 5 staff who worked regularly with 2 particular service users, in a nongovernment day centre not enrolled in the research.

In keeping with the principle of MBL, intervention was introduced across the 3 participating day services and again across the 3 group homes following the staggering of baseline sessions. The educational intervention was delivered in Day Service A (DSA) over two sessions in one week (n=4-6), in DSB over four sessions across two weeks (n=3-5), and in DSC over 3 sessions in one week (n=5-7). For the group homes, intervention was delivered in Group Home D (GHD) over two sessions in one week (n=7), in GHE over two sessions over two consecutive weeks (n= 8-10), and in GHD over two sessions over two consecutive days (n=14). The variation in the sessions delivered accommodated for the fact that not all staff participants were present for every session; to further address this problem, a summary of the previous session was included at the beginning of the next session. The staff were offered follow-up sessions, but none took up the offer, although one day service coordinator did ask the first author to present the model at a staff meeting for a non-participating day service.

Settings and Participants

Three nongovernment organisations, located in Northern, Eastern or Western suburbs of Melbourne, providing day services and/or group home services participated in the study. Criteria for inclusion of service users was having a severe or profound intellectual disability, and little or no speech, but demonstrating intentional communication (i.e., demonstrated communicative intent and a recognised means of getting a message across). Potential participants were identified by senior staff in each organisation. Letters were sent to their

next-of-kin via their organisation on behalf of the researchers seeking permission for inclusion in the study. Initially, written consent was gained from family members for 7 day service users and 6 group home residents. Table 1 shows the characteristics of the 5 day service users and 6 group home service users who finally participated in the study.

Table 1.

Characteristics of service user participants

Characteristics	Group		
	Total (*n*=11)	*Day Services* (*n*=5)	*Group Homes* (*n*=6)
Average age	46.1	40.68	50.63
Mean estimated Part 1 ABS score	69.39	72.01	67.21
(range)	(33.78-104.58)	(34-98)	(34-105)
ABS profound	18.1%	20%	16.7%
Male (%)	81.8%	100%	66.7%
Physical Disability (%)	54.5%	40%	66.7%
Epilepsy (%)	27.3%	20%	33.3%
Mental health (%)	18.2%	20%	16.7%
Visual impairment (%)	27.3%	20%	33.35
Autism Spectrum Disorder (%)	9.1%	0%	16.7%
Informal communicators	18.1%	20%	16.7%
Basic symbolic communicators	18.1%	0%	33.3%
Advanced symbolic communicators	63.6%	80%	50%

Day services. Five participants were drawn from 3 day services. Service users from the same service were located in the same group (usually based in a home room with some day centre based activities) and present in the day centre during observational visits. In DSA, service users (*n*=2) were in a group of 6, although up to 12 service users were present for some

activities, in day DSB, service users (*n*=2) were in group of 5 and in DSC the service user (*n*=1) was in a group of 5. Staff participants were direct support workers (*n*=21) and coordinators (*n*=3): 5 in DSA, 9 in DSB, and 10 in DSC. Six direct support workers either left the workplace or their responsibilities changed such that they no longer had frequent contact with the service users before the completion of the study. Table 2 provides details of the characteristics of staff who participated in all aspects of the study.

The three day settings varied in size from 20 to 60 service users. One of the smaller settings provided support to people who were predominantly non-ambulant. Staffing ratios were approximately 1 staff : 3 service users. Staff were usually assigned to a particular group of 5-6 service users and supported others only when necessary to cover staff absences. Nevertheless, there were day-to-day changes to staffing and service user activities, and the number of staff providing support varied frequently throughout the day. For example, during one observation period at DSB, the number of staff in the room ranged from 0 to 3 and service users from 2 to 9.

Each of the day services followed a similar timetable of group activities, with at least one programmed activity in the day. The choice of activity was determined according to each service user's personal plan and was consistent across days of the week (e.g., Monday-shopping, Tuesday- cooking, Wednesday- ten pin bowling). Activities were either centre-based or occurred in the community. The sequence of activities was similar at each service. The day commenced with a hot drink on arrival, a discussion about the weather, how people were feeling, any news from home and the day's planned activities (this was formalised at two of the day services using picture timetables, but was ad hoc at one service, being reliant on the interest of individual staff). Then followed morning tea, a planned activity, lunch, and either a continuation of the morning activity or a different activity. At one service where the service users had high support needs, there was only one planned activity each day as meal assistance and personal support took much of the available time.

Table 2.

Staff member characteristics in day services and group homes

	Whole Sample (n=36)	*All Day Services (n=18)*	*DSA (n=4)*	*DSB (n=6)*	*DSC (n=8)*	*All Group Homes (n=18)*	*GHD (n=6)*	*GHE (n=4)*	*GHF (n=8)*
Number of staff (%)	36 (100%)	18 (50%)	4 (100%)	6 (100%)	8 (100%)	18 (50%)	6 (100%)	4 (100%)	8 (100%)
Age 21-30 years (%)	5 (14%)	4 (22%)	0	1 (17%)	3 (37%)	1 (5.5%)	3 (50%)	0	1 (12%)
Age 31-40 years (%)	8 (22%)	2 (11%)	1 (25%)	0	1 (12%)	6 (33%)	3 (50%)	2 (50%)	1 (12%)
Age 41-50 years (%)	11 (31%)	8 (44%)	2 (50%)	5 (83%)	1 (12%)	3 (16.5%)	0	1 (25%)	2 (25%)
Over 50 years	10 (28%)	5 (28%)	2 (50%)	0	3 (37%)	5 (28%)	0	1 (25%)	4 (50%)
Cultural & Linguistic Diversity	8 (22%)	6 (33%)	0	3 (50%)	3 (37%)	2 (11%)	1 (17%)	0	1 (12%)
> 5 years experience in current service	11 (31%)	5 (28%)	1 (25%)	2 (34%)	3 (37%)	6 (33%)	1 (17%)	1 (25%)	4 (50%)
Qual. in disability	26 (72%)	16 (89%)	4 (100%)	4 (67%)	6 (75%)	10 (56%)	2 (34%)	3 (75%)	5 (62%)

Qual. - qualifications

Group homes. Two service users participated from each group home. Seven service users lived in GHD, 6 in GHE, and 6 in GHF. Staff ratios during the observation period were 2 staff: 6 service users and in GHD 4 staff: 7 service users. Usually all service users living in the home were present by 4pm and staff were busy assisting residents in activities of daily living, including showering and meal time assistance. Some residents watched TV while others were seated near the TV. Some residents went to their bedroom before dinner and staff checked regularly on them. No residents were involved in cooking activities, but some were involved in making hot drinks before dinner. Some staff checked service user's news diaries

and completed house paperwork. Much of the social interaction between staff and service users was banter either about something to do with the service user or the TV program. There were some instances of an individual activity with a service user, such as massage and games with objects.

Staff participants were direct support workers (*n*=17) and coordinators (*n*=3), 6 in GHD, 6 in GHE, and 8 in GHF. One direct support workers resigned and one was not available for the training. See Table 2 for characteristics of staff who participated in all aspects of the study.

Service User Characteristics

As all the service users had complex disabilities, data about their characteristics were collected through observation by the first author (a speech pathologist) and interviews with staff. The measures of communication and adaptive behaviour skills completed in this way were the Triple C: Communication Checklist of Communication Competencies (Bloomberg, West, Johnson & Iacono, 2009); the Vineland Adaptive Behaviour Scales (VABS) II Survey edition (Sparrow, Ballad, & Cochiti, 2005); and the short form of the Adaptive Behaviour Scale (SABS) Part 1 (Hatton et al., 2001).

Day service users. The service users were aged from 24 to 52 years (mean= 40.68); their overall scores on the VABS indicated profound disability (SD >-2) and receptive and expressive communication skills on the VABS mean scores were 1.39 and 0.96 years, respectively. Results from the Triple C Checklist indicated 4 service users could communicate at an advanced symbolic level (using under 50 symbols). The SABS indicated all had severe disabilities, with scores of 34-98 (mean=72.01), and one service user had a profound disability, with a score of 34.

Group home service users. The service users resident in group homes were aged from 43 to 67 years (mean=50.74); their overall scores on the VABS indicated a profound disability (SD >-2), and receptive and expressive communication skills on the VABS mean scores were 1.54 and 1.02 years, respectively. Results from the Triple C Checklist indicated 3 residents could communicate at an advanced symbolic level (using under 50 symbols), 2 at a basic symbolic level and one at an informal level. The SABS indicated all had severe disabilities, with scores of 33-105 (mean=65.54), and one resident had a profound disability, with a score of 33.

<center>**Measurement Tools**</center>

Positive Engagement and Relationships Momentary Time Sampling (PEARmts).
A specific observational tool to measure the dependant variable for the MBL (i.e., nature of relationships between staff and participating service users) was developed following a decision not to use the published tool as originally intended (The Short Observational Framework for Inspection). The original tool required extensive formalised training not regularly available in Australia; further, it did not include all elements of the positive relationship model.

The PEARmts measure, designed for the study, was based on the EMAC-R, a tool for observing service user engagement in meaningful activity and staff contact and assistance to service users (Mansell & Beadle Brown, 2005). The EMAC- R has been used extensively in studies of Active Support (Mansell & Beadle-Brown, 2012). Changes to the EMAC-R included addition of items related to modes of staff interaction and relationships processes. As with the EMAC-R, the PEARmts was completed through momentary time sampling, providing an observational measure of engagement of residents, and staff interaction and relationships between service users and staff in day services and group homes. It had three non-exclusive categories: (1) service user engagement; (2) staff contact, assistance and interaction mode; and (3) relationship processes. Table 3 provides details of the categories, including examples to illustrate the coding schema.

While the tool was in development, the first author attended a 3-hour training session on coding the EMAC-R, conducted by one of its designers, Julie Beadle –Brown. The coding development was discussed with co-authors and a researcher with extensive experience in EMAC-R coding. The PEARmts was piloted over two 90 min sessions in a group home, and then after modifications for a further two sessions in group homes and a two 2-hour sessions in a day centre. A code book was developed with examples of behaviours relating to each code. A copy of the PEARmts is in Appendix B

In using the PEARmts, a paper-based form, the number of staff members and service users in the room/home at the time of the observation were recorded. Then interactions between staff and service users were recorded over a 2-hour period, with a stop-watch signalling the 1-min intervals during which observed behaviours were recorded. Each service user who was present was observed for 5 min in rotation. Also recorded were missed interactions (i.e., usually when the service user left the room or the observer was distracted). All observations were conducted by one observer, who had been trained by the first author.

Table 3.

PEARmts items and examples of behaviour.

Category	Code	Examples taken from field notes or PEARmts
Engagement by service user	Social interaction	SU[1] yells out for attention (GHE: 041314)
		SU vocalises at SM[2] who then responds (DSB: 010113)
	Activity /task engagement	SU washed and dried his plate with verbal and gestural prompts from SM (DSC:300713)
		SM asked SU if he wanted to crack some eggs. She rolled his sleeves up for him and then assisted him to crack the eggs. SU put his hand into the egg yolk; he and SM looked at each other as they continued cracking eggs and smiling at this funny behaviour (DSB:190813)
	Self stimulation	SU twiddles repeatedly with a shoe lace (DSC: 160113)
		SU vocalises to self and repeatedly taps chair (GHD: 260214)
	Challenging behaviour	Inappropriate behaviour, screaming, hitting others (none observed)
Staff contact, assistance and mode of interaction	Staff assistance – to do something	SM positions SU in chair so he can see what everyone is doing (DSC:170713)
		SM sits beside person, chats with him and assists him to complete a puzzle (DSB: 010113)
	Other staff contact	SM chats briefly to SU (DSC:161013)
		SU put the milk back into the fridge and SM thanked him warmly (DSB:1908213)
	Uses speech	SM chats briefly to SU (DSC:161013)
	Uses non speech informal mode e.g. gesture	SM waved back at SU and tickled him affectionately under the chin.(DSA:082013)
		SM stood in front of SU and held her hands up in a comical "I dunno" gesture, SU smiled.(DSB:151013)

Category	Code	Examples taken from field notes or PEARmts
	Use non-speech formal e.g. signs /pictures	SM approached SU at his usual place in the corner and asked him using key signs how he was and then chatted to him briefly about the iPad (DSA: 270813)
		SM Chatted to SU about how he was feeling (SU said 'happy' and 'sad') and what he did last night. SM and SU used a combination of speech, pictures and signs (DSC:260713)
Staff relationship process	Recognises individuality	SM noticed SU was not happy as he was not sitting in his preferred spot (allowing SU to watch everyone coming and going) so she repositioned his chair (GHE:250314)
		SM recognising preferred activities for SU whose preferences change regularly "The bolt's the new thing [she likes] this week?" (GHD:230114)
	Shares the moment (routines /mimicry)	One of the SUs puts a tea towel over his head and starts a kind of 'peek-a-boo' routine with a few of the SMs, who all pretend to celebrate when he's "gone" and feign surprise when he comes back; everyone is amused by how much fun he is having and SM comically expresses dismay that this is going to go on all day now. (DSC: 131114)
		Staff member jumping around in front of SU playing hand clapping game, service user smiling and laughing as he holds his hands up to join in the game (DSC:131113)
	Shares the moment Having Fun	SM brings resident back from bathroom, chatting on the way – jokes about dog's refusal to get up and make room for them (GHF:160114)
		SM making fart noises with an app on her iPhone to entertain the SU (DSB:221013)
	Shares the moment Hanging Out	SM sitting with resident watching TV, SM chats about what is happening and says "What do you reckon?" (GHF: 130114)
		SM remained sitting next to SU for several minutes chatting about the other SUs

Category	Code	Examples taken from field notes or PEARmts
		outside.(DSC:210813)
	Connecting Provides security shows warmth & respect	SM rubs SU's shoulder gently while quietly saying "What's up?" (GHD: 060214) SM leaves the room but tells the resident she will be back soon (GHF: 050214)
	Connecting Adjusts the message	SM asks Yes/no questions, leaves sufficient time for resident to respond (GHF:13 0114) SM helps SU to update the picture timetable. SU puts the picture on the word and repeats some of the words after her: Monday, cooking (DSB:111113)
	Shares the message – Takes responsibility to make something happen e.g. adds photos to iPad , prompts SU to tell news	SM reads an email from resident's mum. She then composes an email to his mum with his latest news, checking with him what she should write. SU is beaming and blinking yes to all the suggestions. (GHF:190214) SM prompts resident to tell casual SM about what he had been doing (GHE:040314)
	Shares the Message Spreads the news – informs others things they need to know to help interactions	SM tells casuals how much two SUs like a televisions show (GHF:130114) New SM was unfamiliar with SU's communication system and was assisted by other SM to ask questions more appropriately and to interpret SU's head movements (DSC:310713)

1 = SU is service user; 2 = SM is staff member

If one or more of the eight relationship process codes was marked, the score was 1 (i.e., a score of 1 was allocated if two or more codes for the one process were ticked). Scores for the dependent variable (relationship processes) were tallied for each session, presented as a percentage of minutes observed, taking into account missed observations. Each total session score formed the data point for that session. Similarly, counts were made of service user engagement (a score of 1 was allocated if one or more item of social interaction and activity task was coded) and frequency of staff interaction (a score of 1 was allocated if one or more of staff assistance and other staff contact was coded). Tallies for scores for each session were

converted from a count of the proportion of observed time to a percentage figure and plotted on a graph.

Staff Demographics

An adapted version of the Staff Experience and Satisfaction Questionnaire (SESQ) (Beadle-Brown et al., 2003) was used to collect data on staff demographics and disability experience. Some modifications were made to the terminology for the Australian context.

Staff-Client Interactive Behaviour Inventory (SCIBI).

The SCIBI (Willems, Embregts, Stams & Moonen, 2008, Willems, Embregts, Hendriks & Bosman, 2012) is a self-administered staff questionnaire that measures both interpersonal and intrapersonal staff behaviour in response to challenging behaviour of adults with an intellectual disability. Although the service users in the current study presented with few incidents of challenging behaviour, the tool was selected because of its focus on staff behaviour when supporting adults with intellectual disability. In addition, published information on its statistical validity and reliability was available. Willems et al. (2012) obtained good internal consistency, with the seven factors confirmed statistically. It was also found to have satisfactory internal reliability, with Cronbach's alpha ranging from 0.68 (support-seeking) to 0.89 (proactive thinking) (Willems et al, 2012).

The questionnaire consisted of 30 statements, each requiring a 1-5 Likert scale response anchored by "completely inapplicable to me" (1) and "completely applicable to me" (5). Staff complete each item in relation to a particular client; for example, item 2 was "I value this client." The SCIBI tapped four interpersonal behaviour factors (assertive control, hostile, friendly, and support-seeking behaviour; and three intrapersonal factors (proactive thinking), self-reflection, and critical expressed emotion (Willems, Embregts, Stam & Moonen, 2010). Scores of items are tallied according to the factors they relate to, providing overall scores for each of the seven factors for each completed form.

Qualitative Observational and Interview Data

Detailed field notes were written during or immediately after the 2-hour period of momentary time sampling for the PEARmts. These field notes provided qualitative data on relationship processes and staff service user interactions that did not occur during the minute of observation, activities that were happening, the general mood of staff and service users, changes in staff on duty, visitors to the room and any timetable changes.

Semi-structured in-depth interviews were conducted with participating staff before and after the intervention. The pre-intervention interviews conducted prior to the observations focused on staff members' relationship with one of the service user participants with whom

they worked, his or her current social network, and strategies the staff member might use to facilitate relationships with community members. Post-intervention interviews sought staff views about their experience of the intervention and of supporting relationships for the particular service user they had chosen. All interviews were conducted in private settings and lasted approximately 30 min. They were audiotaped and transcribed. The pre-intervention interviews were conducted by the first author and the post-intervention interviews by a research assistant.

NVivo 9 data management software was used to manage the qualitative data and support the analysis. Data from the field notes for each observation were inspected to assist in understanding the variability in the PEARmts data. Field note data were also compared to interview data to provide triangulation of what staff said they did and had been observed to do. The interview data were grouped into the three main topics: perceived changes in actions, perceptions of the staff in relation to the relationship training and perceived obstacles to changing their practice. Themes in each topic were identified using constant comparative methods and line-by-line coding.

Procedures

In keeping with the multiple baseline (MBL) design, the general procedure planned was that baseline observational sessions using the PEARmts were conducted concurrently across each of the three day services for three sessions; intervention was then conducted in DSA, following by further data collection sessions while baseline continued in DSB and DSC. Intervention would then be introduced in DSB, with baseline conducted in DSC while post-intervention data sessions were conducted in DSB. Finally intervention was to be introduced in DSC, followed by data collection sessions. The planned process was to repeat this pattern for the three group homes, thereby providing a replication with variation on the setting.

Variability during baseline created difficulties in conducting the procedures as planned, if we were to keep within the required timeframe and budget. As a result, continuing baseline until stability was reached, which contributes to the ability to attribute change to the intervention (Barlow, Hayes & Nelson, 1984), was not possible. Similarly, as a result of the variability during intervention, it was not possible to continue data collection sessions until a clear improvement was evident in the first baseline (DSA) before intervention was implemented in the second (DSB). This problem pervaded the data collection across the three day services, and was also evident in the group homes. In order to address the problem of variability balanced against the need to keep the study progressing, it was decided to

implement intervention in DSA (the first baseline) after a minimum of 4 data collection sessions in baseline (which were conducted over 4 weeks), on the condition that the final data point pre-intervention did not score higher than the previous time point. This condition was met for the first, and most, of the other baselines.

Each service/home had at least one observation session a week rostered in advance over a 6-week period. Data collected from sessions that totalled less than 30 min of observation for a service user during the 1-hour observation were omitted from analysis.

Day services. Observations were conducted between 9:00 and 11:00 am at each day centre. According to the first author's experience of data collection in day services, this was when most interactions were likely to occur. This was the time when activities for the day were discussed, news was shared and drink selection occurred. In order to ensure the service users were at the day service (and not in the community), the observation usually occurred the same day of the week and included the same activities (e.g., the observation at DSB was on a Thursday during a timetabled cooking program).There were no occasions when observation sessions were cancelled because of the absence of the service users.

Eighteen 2 hour observation sessions were conducted at each day service over a period of 19 weeks (during one holiday week all day services were closed), with the target of obtaining 1 hour of observation for each service user each session. Observation time totalled 6,240 mins (DSB - 2,322 min; DSA- 2,250 mins; DSC - 1,668 mins). For sessions in which less than 30 min of observation was obtained for an individual service user, data for that service user were omitted from analysis because the session had provided insufficient time to effectively sample relationship processes. This data omission was across 11 sessions (7 from DSA, 2 from DSB, 2 from DSC).

Group homes. Observations in group homes were conducted between 4:00 and 6:00 pm because this time period has been suggested to be optimal for data collection about service user engagement in group homes (Mansell & Beadle-Brown, 2011). There were no occasions when observation sessions were cancelled because of the absence of a service user. On three occasions, no data collection was completed because of an absence of staff who had provided consent to participate or who had attended the training.

Nineteen 2 hour observation sessions were conducted at GHD, 17 at GHE, and 20 at GHF. Observation time totalled 6500 mins (GHD - 2280 mins; GHE -1820 mins; GHF - 2400 mins). As for day services, data for individual services users were omitted from analysis for sessions in which less than 30 min of observation was obtained. This omission occurred across 15 sessions (1 from GHD, 6 from GHE, 8 from GHF). Field notes were written during

and after each observation session. The SCIBI was completed by participating staff in both settings, and interviews were conducted prior to and post the observations.

Inter-rater Reliability

Inter-observer reliability was assessed for each of the observational behaviour codes of the PEARmts. The two researchers collected the data in DSB over four sessions. Reliability data were available for 330 min across the two researchers trained to use the PEARmts. Inter-ratter agreement was 100% for no occurrence of self-stimulatory behaviour, challenging behaviour and contact from other service users. Occurrence of behaviours was recorded by one of the two observers to have occurred from 2 to 11 times across nine categories, and as such the reliability shown in Table 4 was low, but the non-occurrence reliability was high (97-99%).

Table 4.

Nine categories with low occurrence

Category	Occurrences	Kappa	Total Reliability % agreement	Occurrence Reliability % agreement	Non-Occurrence Reliability % agreement
Social Interaction	6	0.456	96.91%	30.77%	96.86%
Non-Speech Informal	11	0.456	96.91%	30.77%	96.86%
Non-Speech Formal	4	0.397	98.97%	25.00%	98.97%
Individuality	2	-0.005	98.97%	0.00%	98.97%
Hanging Out	2	0.497	99.31%	33.33%	99.31%
Connects	9	0.486	97.25%	33.33%	97.21%
Adjusts the Message	8	0.415	97.25%	27.27%	97.22%
Shares the message	2	0.000	99.31%	0.00%	99.31%
Spreads the news	2	-0.005	98.97%	0.00%	98.97%

Mean kappa value (aiming for Kappa over 0.6) across the remaining six categories (shown in Table 5) was 0.73 (range: 0.66 – 1.00).

Table 5.

Inter-observer reliability across six remaining categories.

Category	Total Occurrences	Kappa	Total Reliability[1] % agreement	Occurrence Reliability % agreement	Non-Occurrence Reliability % agreement
Activity/ Task	67	0.677	90.03%	57.97%	88.45%
Speech	27	0.657	95.19%	51.72%	94.93%
Shares the Moment	2	0.665	99.66%	50.00%	99.66%
Comedic Fun	1	1.000	100.00%	100.00%	100.00%
Staff Assistance	24	0.653	94.85%	51.61%	94.55%
Other Contact	10	0.717	97.94%	57.14%	97.88%
Average	22	0.728	96%	61%	96%

1= total agreements divided by total observations.

Advisory Group

The initial results of the study were presented and discussed with the advisory group (three staff members from the organisations involved in the study). This session provided some confirmation of the results before they were finalised. In presenting the results, all data has been de-identified by changing the names of participants, and referring to the sites for data collection by letters rather than by name.

<center>**Results**</center>

Effects of Intervention

Relationship Processes

   Data from the PEARmts for total relationship processes (i.e., the sum across categories) are presented in Figure 1 for day services and Figure 2 for group homes.
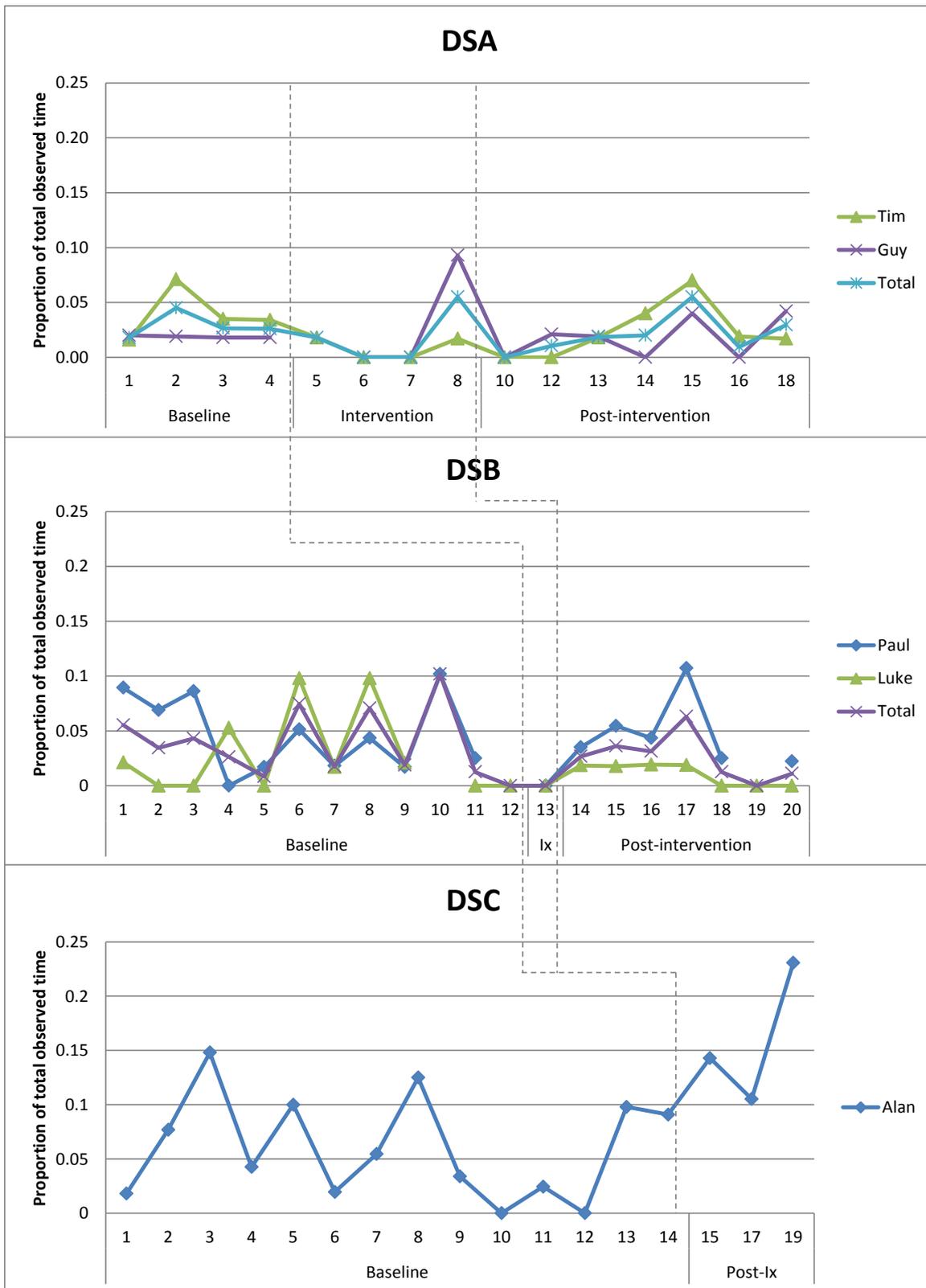
Figure1. MBL for total relationship processes across day services
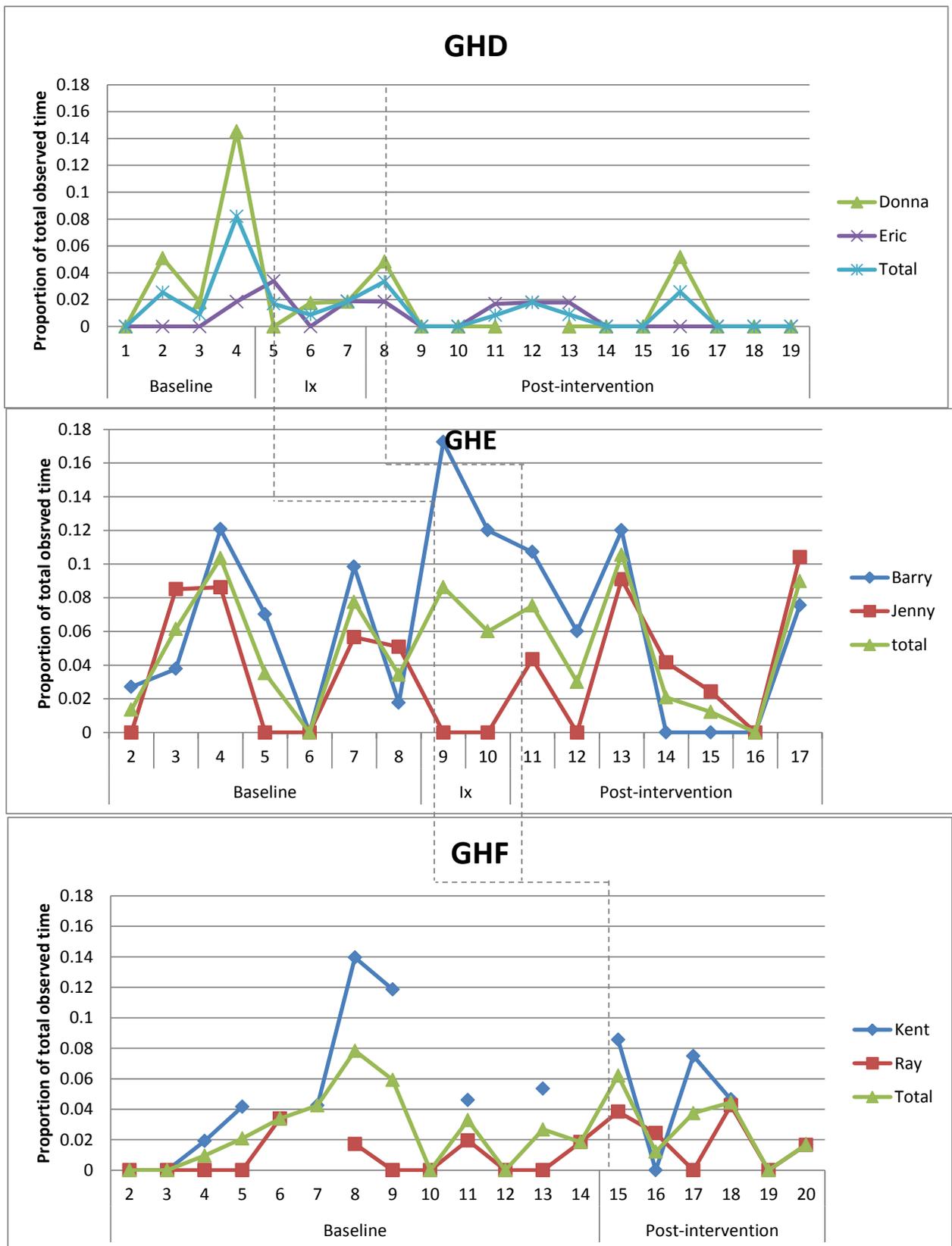
Figure 2 MBL for total relationship processes across group homes

Inspection of Figure 1 indicates great variability for most participants during baseline, intervention and post-intervention, although there were exceptions. For example, the baseline for Guy was stable. Despite the variability in the data, inspection of Figures 1 and 2, respectively, indicates possible intervention effects, especially for DSC service user Alan, and, perhaps less obviously from visual inspection, GHE service user, Barry. The data were analysed using percentage of data exceeding the median (PEM) to quantify the effect for experimental single case data in which variability is evident during baseline (Ma, 2006; Manalo & Solonas, 2009). The PEM is calculated by measuring the percentage of intervention phase data that exceeded the median data point of the baseline. The significance of the effect was determined according to the percentage of non-overlapping data between baseline and intervention phases of the single case intervention trial, as recommended by Scruggs and Mastropieri (1998) (see Table 6). The PEM results are presented in Table 7 for day services and group homes.

Table 6. Effect size ranges

Score	*Descriptor*
90%+	Highly Effective
70%-90%	Moderately Effective
50%-70%	Minimally Effective
< 50%	Ineffective

Source: Scruggs & Mastropieri (1998)

Table 7.

PEM scores for total relationship processes across day services and group homes.

			Setting		
	Day Services			*Group Homes*	
Participants	*PEM*	*Effect*	*Participants*	*PEM*	*Effect*
Guy (DSA)	57.1	Min	Eric (GHD)	36.4	-
Tim (DSA)	28.6	-	Donna (GHD)	20	-
Luke (DSB)	57.1	Min	Barry (GHE)	37.5	
Paul (DSB)	28.6	-	Jenny (GHE)	12.5	-
Alan (DSC)	100	High	Kent (GHF)	60	Min
			Ray (GHF)	66.7	Min

As is evident from Table 7, the intervention was found to be highly effective for total social relationship processes for one day service participant, Alan, minimal for 4 participants, and was ineffective for 5.

The relationship processes that occurred prior to and post-intervention were further explored for DSC service user, Alan. As Figure 3 shows, the processes of connecting and sharing the moment both increased post-intervention.
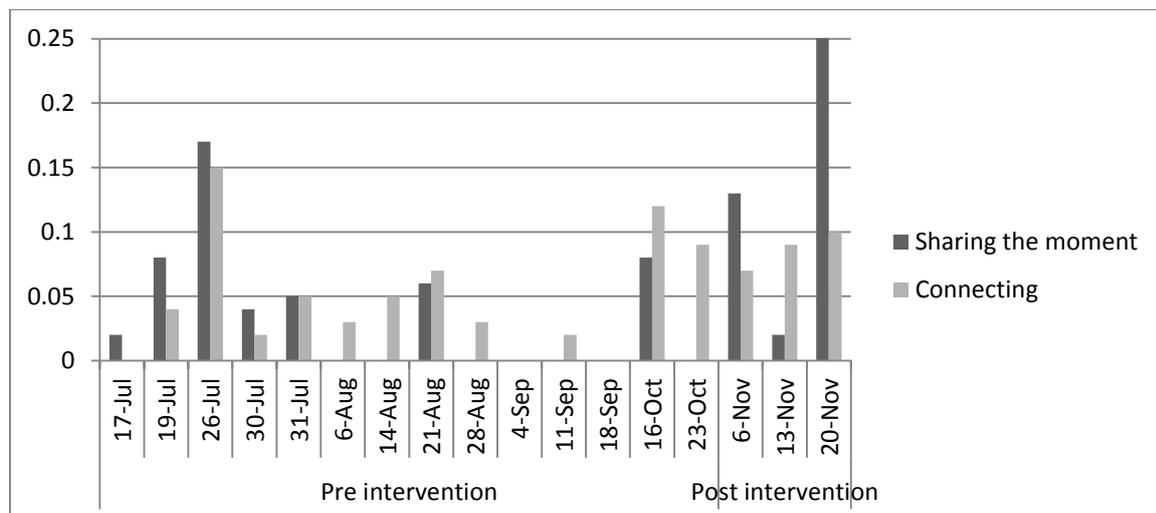

Figure 3. Staff relationship processes for service user Alan

Staff Assistance and Contact

The data for staff assistance and contact presented similar variability to that for relationship processes and the frequency for both of these forms of social interaction were low. On average, staff interacted with service users 9.5% of the time in group homes and in day services (see tables in Appendix C). As for the approach used for the relationship processes, the data for staff contact and staff assistance was quantified according to the percentage of data exceeding the median (PEM) frequencies of staff interactions with service users. The significance of the effect was determined according to the percentage of non-overlapping data between baseline and intervention phases of the MBL, as recommended by Scruggs and Mastropieri (1998). As Tables 8 and 9 show, the effect of the intervention on frequency of interaction by staff with service users in day services was high for one service user, moderate for another and minimal for another; in group homes, it was moderate for one service user and minimal for another.

Table 8.

PEM scores for staff contact and assistance, service user engagement in social interaction or activity in day services.

	DSA				DSB			DSC	
			Service Users						
	Tim		*Guy*		*Paul*		*Luke*		*Alan*	
Code	*PEM (%)*	*Eff#*	*PEM (%)*	*Eff#*	*PEM (%)*	*Eff#*	*PEM (%)*	*Eff#*	*PEM (%)*	*Eff#*
Staff assistance	57.1	Min	42.9	-	42.9	-	42.9	-	100	High
Other staff contact	28.6	-	71.4	Mod	28.6	-	42.9	-	100	High
Service user social interaction	28.6	-	42.9	-	16.7	-	57.1	Min	100	High
Service user activity	14.3	Mi-	57.1	Min	57.1	Min	42.9	-	33	-

Eff# = effect sizes (from Scruggs & Mastropieri, 1998)

Table 9

PEM scores for staff contact and assistance, service user engagement in social interaction or activity in group homes

	GHD		GHE		GHF	
			Service Users			
	Barry	*Jenny*	*Donna*	*Eric*	*Kent*	*Ray*
Code	PEM (%)	PEM (%)	PEM (%)	PEM (%)	PEM (%)	PEM (%)
	Eff#	Eff#	Eff#	Eff#	Eff#	Eff#
Staff	25	25	60	9.1	40	83.3
Assistance	-	-	Min	-	-	Mod
Other staff contact	25	0	20	45.5	40	50
	-	-	-	-	-	Min
Service user Social Interaction	50	0	60	40	40	0
	-	-	Min	-	-	0
Service user Activity	25	37.5	70	0	60	67
	-	-	Min	-	Min	Min

Eff# = effect sizes (from Scruggs & Mastropieri, 1998)

Service User Engagement

The data for service user engagement presented similar variability to that for relationship processes, and was low for any form of social interaction or activity. On average, service users were engaged 13.2 % of the time in day services and 10% of the time in group homes (see Tables in Appendix C). Using a similar approach to that used for the relationship processes, the data for service user engagement in social interaction or activity were analysed using percentage of data exceeding the median (PEM) to quantify the effect of the intervention. The significance of the effect was determined according to the percentage of non-overlapping data between baseline and intervention phases of the MBL, as recommended by Scruggs and Mastropieri (1998). As Table 8 shows, the effect of the intervention on service user engagement in the day programs was high for one service user, and minimal for

three other service users. In the group homes (Table 9), the effect of the intervention was minimal for 3 service users but scores were at the high end of minimal.

Staff Attitudes: SCIBI

Differences from pre- to post-intervention on the SCIBI were tested for staff who participated at both times and provided data for 15 service users in the day services using the Wilcoxon Signed ranks test. For day service staff, a statistically significant result (p=0.01) was obtained for the factor *critical expressed emotion*, which showed decreases in medians and modes from 9 to 7, and 11 to 5, respectively, from pre- post-intervention. The direction of change indicated more positive emotion. For staff in the group homes, who provided data for 33 service users, there were no statistically significant changes.

Qualitative Data on Impact of Intervention

The field notes written during and after the intervention provided rich examples of staff practice associated with the four relationship processes (see Table 10). They also enabled identification of many instances of these processes that were not recorded in the PEARmts as they had happened before or after, rather than on the minute. The thrust of these notes when considered together with the staff interviews support the positive effect demonstrated in the quantitative data for some service users, suggesting that some staff changed their practice as a result of the intervention. Table 10 provides illustrative quotes from staff about their changed practice and excerpts from the field notes of staff practice associated with relationships processes.

Table 10.

Examples of interview quotes and field notes excerpts of staff practice associated with the relationship processes

Relationship process	Quotes from post-intervention interviews		Observations from post-intervention field notes	
	Day Service	*Group Home*	*Day Service*	*Group Home*
Recognising individuality	"we can't go 'this is what the program is', and say we all have to do the same thing, you have to tweak it to each one" (10101)	"Now I know he sort of has a quick snooze, wakes up, has a quick snooze" (60103)	SM chatted about who came to see him last night - asks different family members names and watched carefully for changes in his facial expression.(DSB:141 113)	The staff member looked at Barry and said "Are you not happy being in here now - do you wanna go back in your spot so you can see everything?" (GHE

33

Relationship process	Quotes from post-intervention interviews		Observations from post-intervention field notes	
	Day Service	Group Home	Day Service	Group Home
				:190314)
Know the individual , use positive nicknames, recognises individual differences	"I've got quite comfortable with Luke and he hasn't been that well, so I've sort of, I'm very aware of his changing character, which is good"(10108)	"like everybody's different – which you know –just respecting that everybody's got their own little ways" (60107)	Staff member comes in with an empty wheelchair, sees Luke looking at her and greets him warmly "Hi Luke, you've seen me; hi smiley" (DSB:221013)	Eric gets up and shuts the pantry door. Staff member said "oh sorry - the door was open", acknowledging that he liked doors to be closed. (GHD:120214)
Sharing the moment Having fun banter, jokes slapstick	"so it's that joking banter back and forward, and teasing him about what food do you want, deliberately like pretend to switch drinks."(10105)	"We what we call 'date night' –I sit at the table and we just have dinner while the others are still being showered. And he does respond a lot better to that one-on-one" (40105).	Tim used the iPad to make funny sound effects. The SM turned around and said is that you"? and both smiled. The SM then turned around and imitated the sound of the iPad, Tim grinned.(DSA :160913)	Staff member comes in and Barry yells out. She goes over to him …strokes his hair and asks if he would like to have dinner on his own or with everyone else. "Do you wanna have a dinner date with me?" He indicated yes .(GHE:190314)
Hanging out	so mucking around is happening and he is laughing mucking around with the tea towel like in the desert or something, and he's laughing, and making noises and I was mimicking the noises he was making, we were both laughing (20106)	before [I thought he wanted to sleep] he stated he wanted to be in the kitchen and help cook dinner, he's hanging out. You know, I don't have to continually wake him up. That's what he wants to do; he's there. (60103)	Staff member is joking around - puts bongo drum on top of Luke's head and beats it - Luke laughs. Both are having fun (DSB:151013)	SM brings the money box and puts it down in front of Eric. She sits next to him and chats while doing the medication chart.(GHD:180214)
Connecting Feeling safe, building trust, showing respect and sense of belonging	"it just takes time though to, it is taking the time to listen to them takes longer but once you do, building that rapport with them, it's great".(10108)	With a new person she doesn't trust them …but she's improved in shower as well , she's relaxed - - she's not uptight like she normally used to be before"(50102)	Staff member comes in and strokes his arm and his head, and leans in close and chats to him (DSB:151013)	The staff member is interrupted supporting Barry by a casual SM asking for advice... The staff member apologies to Barry "sorry Barry, just a minute" (GHE:190314)

Relationship process	Quotes from post-intervention interviews		Observations from post-intervention field notes	
	Day Service	Group Home	Day Service	Group Home
Staff adjust their message to assist the Service user/resident to understand and interact.	"that's why we need to take the next step of reinforcing this training …it's not just pictorial timetables at the start of day this is what you are doing and it's the communication for the whole day" (20104).	she had been showing him where the cups were and everything. He just got the cup and handed it to her. He was trying to assist, which was awesome," (60105).	Staff member went over to Tim and chatted to him about what they were doing today. Adjusted message using Key Word Sign and connected with warm tone of voice (DSA:270813)	The staff member interacts matter-of-factly with Barry. Do you want X yes or no? (GHE:190314).
Sharing the Message Taking responsibility to make something happen	"before they weren't talking but I was sort of encouraging them to talk - it is quite nice they have done that and they just sort of encourage Paul" (10101)	"When I see a moment that perhaps everyone needs to know about … I'll let them know" (40103)	Staff member introduced Tim to a casual staff member and introduced her to him and he offered her his hand to shake(DSA:270813)	Staff member tells casual that they need to assist Barry earlier because from the training they have figured out he likes one-on-one (GHE:190314).
Spreading the message to others	just happening now and it's good that the house has got on board and a staff member is meeting with the house -you need …the house so they can be on the same page and be doing the same things we are and have the same resources to use at their house. (20104).	I've compiled [chat book] with the help of her brother. And I think it just – it's a good tool for somebody to pick up and go, 'Oh, well I do have something to talk to you about'. Especially at the day centre (40106).	Staff member plays the news from Paul's Bigmack for the group - tells everyone to be quiet and listen. Plays it twice and then assists the other service users to ask him question (DSB:241013).	Staff member says to research assistant did you know it was Eric's birthday last week; he turned 50." Colin repeats "fifty" and looks pleased with himself. (GHD: 240414)

Sharing the moment and increasing engagement. Many staff said they had increased their social interaction with service users in a conscious manner and found ways to share the moment. Some expressed a sense of sadness at how, prior to the training, they had been unaware of the paucity of the social relationships of the service user they had chosen to focus on. They thought the training had spurred them on to increase the time they spent with this person. They said for example,

I hadn't been speaking to him and giving him options that I'm seeing now"(10103).

Every time I walk in it's always…I can't walk into the room and not acknowledge him, now I make an effort go up to him and talk to him (10101).

The possible opportunities to have fun with service users at the day services particularly resonated with staff, while permission to hang out with service users had done so with group home staff. Many staff commented that finding time to engage had not been onerous and in fact it had increased their work satisfaction. For example, the field notes indicated that staff from DSC had discovered that Alan could count and had enthusiastically encouraged him,

> The staff member was counting bowls with Alan in the presence of another staff member and praised him. "Yeah, legend, now I'm not a liar, Alan! "The staff member appeared to be genuinely enjoying himself, showing off Alan's skills (DSC:061113)

Recognising individuality. Group home staff appeared to know the people they supported better than did the day service staff. Although many staff members had talked in the pre-intervention interviews about how they saw service users as individuals, the data suggested they revisited their relationships and interactions after the training. For group home staff the training reportedly assisted them to think about the assumptions they made about each person and the need to refocus. Some staff members pointed out that seeing and accepting individual differences made the person more interesting, thus working with the person around those differences was a compelling outcome of the training. Staff members said for example,

> [the need was to] focus on what he wants not what I have to give him (10101).

> I think we view him differently because he's more interesting, he's showing a bit more character and skills as well and when you see some small improvement then you can push a bit further so you take more interest (30108).

Staff recognised individual strengths and differences, and the individuality of service users despite their limited speech, as recorded in the following field notes.

> The service users were assigned roles according to their strengths and abilities. Paul was given the job of operating the mixer with the jellybean switch, whilst the service user who liked to read was given the job of reading out the recipe (DSB:241013).

> Because they are the quiet ones in the group that yeah they [still] are individuals (10108).

Connecting. Staff from both types of service reported they had respectful relationships before the training, but were now clearer about how to communicate with

service users as a result of the training. One staff person began to look more closely at the resident's communicative signals. She said,

> it's the little things that I've picked up on, one of the things was that I think I was misinterpreting one of her signs that was actually probably frustration; I thought it was actually happiness in her. The other guys sort of pointed that out, in fact I learnt that in the training. I've since watched her and I've since realised, yeah, you know, they're right about that (50101).

Some day service staff reported they had gone back to service users' documentation or looked for topics about which to communicate with the service user. Staff from both types of services commented on learning specific strategies such as knowing more of a service user's key signs or allowing service users increased time to respond to requests. In terms of adjusting the message, only a few staff members talked about changes they had made although more use of Key Word Sign was evident in the field notes. One group home staff member had refreshed her knowledge of these so she could communicate better with another resident in the house. A day service staff member was observed supporting the service user's communication around daily timetables using visual supports.

> The staff member sat with Guy talking about what they were doing and showing him the pictures of the activities for the day. She helped him update the visual timetable. He repeated some of the words after her; Monday, cooking (DSA:181113)

The reciprocal aspects of trust and respect led some staff to increase their expectations of the people they supported. A staff member talked about upping her expectations around the way a resident communicated. She said "if he puts it [cup] in front of you and looks at you I'll go 'okay what do you say' you ask him for his manners, because that's um you'd like a drink, yes please or please or thank you" (60101).

Sharing the message. Staff talked about how they had made an effort to share the message through taking responsibility to increase interactions. Day service staff talked about how not only themselves, but other staff were taking on the responsibility to interact more "the whole staff is trying to encourage Luke more…bring him in more in more so he is a lot of the time more engaged and not so much on the fringes" (10105).

One group home staff member felt she could best assist the service user by connecting with his family. After the training, she had made an effort to contact the service user's mother and ask her some questions about him. A day support worker talked about how prior to the training she had not thought about contacting the family, but after the training when she had

taken an opportunity to talk with a family member the outcome had been very valuable. She said,

> His sister has been doing the caring while he has been in respite, she's been
>
> nearly on a daily basis or ringing us the other day so what we've learnt off her
>
> has been fantastic, and she's loved it"(10103).

In addition, some day service staff were seen to be taking on individual responsibility to make positive changes and one day centre coordinator said,

> I was really impressed with what I saw, the way [the staff member] was
>
> supporting people in the cooking program and I've never sort of seen that
>
> before, it was always, everything is too hard (20106).

Although coordinators were traditionally the staff who did the majority of the paperwork several of the staff said they had taken on responsibility to make sure new staff across different environments knew relevant information about the service user they had focused on. One group home staff member talked about how she had improved her messages to the day service, including information on any family visits. Other staff talked about how they had expanded on the details about residents they shared with new staff members or by developing chat books to go to day services. They said for example,

> "I just think you know when you first meet somebody you don't know them, you
>
> don't know their likes, their dislikes…so if you've already got a heads up, on a lot of
>
> things then it's easier to have a better relationship (40101).

> it's only been the last fortnight but it's been a lot of positive feedback from
>
> the casual staff already, going we weren't feeling like we belong and we're
>
> kind of getting more information from permanent people and we're actually
>
> finding out a little bit more than what we previously have (50103).

> ***Evidence of staff changed practice via changes in service users.*** Positive effects on

service uses of changes in staff social interaction with service users were remarked upon by staff and recorded in the field notes. One of the group home staff members had developed a growing awareness of a service user's need for conversation, even though the service user was not able to communicate formally. One staff member talked about her relationship with a service user and said "I'm with him a lot of the time, I just think he's starting to feel a bit more confident, happy maybe" (30104). Another talked about a service user, "being more active in conversation" (40106). Even when the groups of service users were diverse, staff had found ways to include people with little speech which in turn seemed to increase the

likelihood of their initiating social interactions without prompts. Staff members commented for example,

> He likes that he is the helper and I've found engaging him in that he will tend to come up more to me. Our conversations are about that engagement, around activities. Yeah. I think we are kind of building a relationship based around that (20103).

> I pushed myself to get to know him. Now he is more responsive (10105).

> Even like he's been saying a lot more sentences than usual (30104).

Staff also reported that increased interaction of some service users reduced unwanted behaviours and gave glimpses of a different person. One staff member said "if they [staff] are interacting with him more which they have been, that takes his focus off trying to pinch someone's coffee out of their hand"(20104). Another staff member noticed that the service user was more relaxed since more people had become familiar with his communication. She said " he doesn't have cramps as much as he used to cause he tenses up and that's when he gets his cramps so he is getting more relaxed himself" (10101). Another commented on how much more independently cooperative a service user had become. She said,

> he was carrying the bowls and he was enjoying the attention… knowing I was watching him so that was great and … of his own accord he just started packing up all the bowls that were laid out on the counter before. So it was like wow, little moments like that (20106).

Staff Perspectives on Training

Staff perspectives of the training ranged from "ok" to "awesome". They said for example,

> It's been like a – a pretty good- *massive* learning curve for me. Just- you take communication for granted I suppose" (40106).

> [the training] "opened my eyes to more the importance of being with the person as opposed to just taking care of their physical needs but more try and involve their emotional and relationship needs and communication more than anything else"(10105).

Others commented on the need for ongoing training, the practical nature of the sessions and the insights they had gained.

For many staff, building social relationships for the people they support was not a new concept, but they saw the training as having reinforced what they already knew and highlighted the importance of building relationships for all service users. One group home staff member said, for example,

> "You get busy … the day to day, the mundane type thing - and you have one of those trainings, it's just good because it gets your focus back onto that he's an individual " (40101).

The training was seen to have allowed staff time to focus on and get to know individuals, and to reflect and open their minds to different possibilities. Some house staff suggested it had made them realise they knew little about what service users did when they were not at home. One said, for example,

> the training "got you thinking about the way things are different for Donna and Eric and the way relationships are different for them outside of this house and outside of the day centre- that was really good and beneficial to us (50105).

Staff found the relationship for useful for thinking about relationship development. One day service staff member noted that the segmentation of the model into different processes made it manageable to implement and she could see how she might use it with other staff as an approach to problem solving. Group home staff suggested the model allowed peer learning. For example, one said,

> I think as a key worker it's really vague about what you're meant to be doing…but I think having something like this is a really good guideline to some signposts of which direction you should be moving in (50104).

Reflecting on the training, staff in both types of services were mindful of the small institutionalised social networks of the people they supported.

> I remember talking about the circles – their circle of friends and comparing it to our friends, the paid and nonpaid friends, I remember that quite clearly, … the guys had a high amount of paid people in their life compared to non-paid people, especially when you compare it to what we came up with (50105) .

Staff thought that training in small groups provided the opportunity for staff in the same setting to adopt a consistent approach to individual service users. One person remarked,

Being consistent, us all sort of being on the same page with things sometimes can be difficult. Everybody's got sort of their own little ways of um – but yeah if we sort of try and say right this is what's going to help (60107).

Some staff suggested it might be most useful for new staff but all participants reported benefits from the training. These benefits included having an opportunity to reflect on their practice with their colleagues providing insights to their work, gaining an increased awareness of the complexity of their job role and led to some staff questioning their practices.

Insights from the Qualitative Data about Variability and Low Frequencies of Social Interactions

As noted, the PEARmts data were very variable and showed very low scores on all three main categories. This is the first study to use a measure of relationships, but research on the implementation of active support in group homes that has measured service user engagement and staff contact and assistance has shown similarly low scores. The scores for group home service user engagement in this study (10%) are lower than a study of group homes in Victoria where service users with more severe intellectual disability (less than 151 on SABS, which is similar to the group in the present study) were engaged on average for 39% of the time (Mansell et al., 2013). Scores in the present study for staff assistance (4.6%) and other staff contact (5.4%) are comparable with those in the study by Mansell et al. of 4% and 7% respectively. There are no comparable published data on service user engagement in day services.

Understanding the reasons for these low and variable levels of service user engagement may help to explain some of the results of this study, with insights from the observation field notes and interview data. Many staff felt pressed for time, which they suggested meant routine activities were prioritised over attention to individual service users. The phrase, "there's not enough time" (50102) was echoed by almost all staff members. The interview data strongly indicated that at times staff felt they were too busy, stressed or supporting too many service users to be able to focus on social interaction. These data suggest staff divide their work into either tasks or interaction with service users, rather than finding ways to combine the two.

The pressure of time felt by staff was not necessarily constant and may have stemmed from the quite chaotic nature of services at times, which diverted their attention away from services users. The field notes below illustrate this and draw attention to the impact on staff and service users of unpredicted reduction in the number of staff, change to programs and the

effect of working alongside casual staff who are unfamiliar with service users and have not been well inducted into the service by the organisation.

> There were about 7 staff members at the day service. One was going to be away for three weeks and another had a family emergency. There were two electricians in the room as the gym equipment was not working. This meant that all regular programs were not running. The electricians made a considerable amount of bursts of noise. From 10.30 – 12.15 there were two staff running programs. One staff member took 3 service users out for a walk instead of using the equipment. The other staff person ran a cooking program for 5 service users which was predominantly a one-on-one activity cutting up vegetables and then cooked them in the microwave. The number of service users varied from 6-10. For periods of time there were no staff members in the room. (DSA:150713)

Deviation from the planned number of staff providing support to service users was seen across several data collection sessions in day programs. This deviation had led to alterations to planned activities, such as a cooking session being abandoned as there were too many service users present to be meaningfully involved, and larger groups of service users who had more varied abilities than staff were used to. Similar issues occurred in the group homes, where staff absences for example increased staff stress and reduced staff capacity to interact.

> The three casual staff members congregated in the doorway between the living room and the corridor and discussed what to do next; asking each other if they knew the routine. A staff member comes back up the corridor and told them what to do. Meanwhile, two casual staff members tried to assist a hearing impaired resident to the shower, however, staff members were unfamiliar with the signs needed to get their message across (GHE: 250314).

Day program staff suggested it was difficult to maintain a relationship with a service user without regular contact and that being moved between groups in a program, as often occurred due to staff absence or resignations, interrupted the development of relationships. Staff also talked about difficulties in gaining regular information about activities in which the service users were involved when in other environments, which could have been used as conversational topics, and, hence, the basis for social interaction. Table 11 summarises the barriers to improved relationships and increased social interaction with service users. There appeared to be a trend that staff in the services in which the educational intervention had not

been shown to be effective were more emphatic about the impact of barriers, such as low levels of staffing than those from services with positive quantitative effect.

Staff pointed to another reason for low scores in their interviews in positing that the observations had not been well timed to capture social interaction between staff and service users. Day program staff suggested this happened most often when they were out in the community, often on a one-to-one basis with service users, rather than in the centre. Group home staff suggested that more social interaction occurred at weekends. Many staff were wary of being observed, and some suggested that this had stifled the nature of their interactions with service users. For example, they said

> [being observed was] off-putting…"I tried to blank her out but it didn't just work – so I was very quiet (60102).

> I can't behave naturally when someone's watching me; I just can't, you know. I felt like, 'Well, if I go talk to Donna now, is she going to think that I'm only talking to Donna because she's [research assistant] there? (50101)

Table 11

Staff perceptions of barriers to increase the quality of social interaction

	Quotes from Day Services Staff	*Quotes from Group Home Staff*
Staff stress and not consistently working with the same service users	"It's just been chaotic. It's really hard to focus on someone when you are just dealing with the day to day issues" (20103).	"some people only get one day off at a time and so when you say they have to come in that extra night and you have no days … it's not too much fun, nor is it having a tired and grumpy staff member " (50105)
	"we've had to focus on him but yeah and I'm not in that room a lot, probably hardly ever with Alan or that group" (30101).	you know focusing on building a relationship and having one-on-one contact, we're gonna burn ourselves out. If I'm working with a person who hasn't worked here before, that's a full-on shift, you've gotta do absolutely everything" (50101)
Being busy	"meal assisting is great if you can talk to the person while you're getting them one- on-one 'but a lot of them you can't so it can be limited with timing"(10109).	Getting Donna her meal giving her a bath, getting her ready for the bed; those are the basic needs that come first. Activities – she's already gone to the day centre; she's already done her work 'cause that's what the day centre is for, to do the activities and things like that (50102).
	"you are out there out there working all the time and you just do what you do every day" (30107).	"medication and food, meal assistance profiles and all that sort of outweigh what the trainer and everyone have been discussing" (40106).
	They [service users] want that time and the thing is one service user is nonverbal so he will probably miss out more than someone who can ask me every two seconds. (10102)	"trapped in the practicalities of maintaining your house" (50104).
Lack of information from others/other environments	Because his family doesn't share the information… so they don't really share what he does on the weekend or anything so …not that much thought to communicate a lot with family or friends (10106).	"we do write notes to each other,-it's hard because somebody on shift may be here only twice in one week, whereas other people like myself I'm here you know five, six days a week "(60105).
	"unless the parents ring up we really don't know and the houses, we don't know" (10108).	I don't know what factors are at play … other than the fact that she's been at programs all day and she's probably tired (50101)

Discussion

This aim of the study was to implement and test an educational intervention to improve the frequency of staff interaction with service users and the nature of their relationships. This was the first study to measure staff service user relationships with a measure derived from a grounded theory relationship model for people with severe intellectual disability. As the pre-intervention (baseline) measures clearly demonstrate, the study started from a very low base of observed staff use of relationship processes. The levels of service user engagement were also low compared to data collected in group homes in Victoria using similar measures. There is no comparable data on any of these measures for day programs, highlighting the very limited research about these services in general.

The comment of one staff member about changing staff practice summarises our findings well: "It is a slow process but it is moving in the right direction and moving forward each day" (20104). When the quantitative and qualitative data are considered together, there is evidence of positive changes to the frequency of staff social interaction and the nature of their relationships with service users following the training intervention.

In light of the limited published research into how to support relationships between staff and people with severe intellectual disability and ultimately community inclusion, the results from this research look promising, particularly for day service staff. The strength of experimental single case designs, as used here, is in demonstrating treatment/intervention effects at the level of the individual, thereby indicating the potential clinical /practical relevance of findings. This strength was evident in our finding that the relationship processes intervention was highly effective showed a high effect for 1 day program service user and for 4 other service users, minimal, but discernible effects were shown. A similarly high effect for the same service user was found in respect of staff contact and assistance, and engagement. Minimal effects, though mostly on the high side were found in respect of staff contact and assistance for 6 service users and in respect of engagement for 4 service users. In detecting the effect of the intervention on individuals, the value in continuing a line of inquiry and research is demonstrated. In contrast, group studies with larger sample sizes may fail to reveal small, but potentially clinically significant changes for one or more individuals (Barlow et al., 1984), thereby masking the value of continuing to refine the intervention. The results obtained here indicate that further research is warranted to explore strategies to enhance the intervention, as well as service user or staff characteristics that may be aligned with the relationship processes. Once intervention effectiveness has been demonstrated in further experimental single case research, larger group studies that reveal the generalizability

of findings can be justified.

The qualitative data provided descriptive evidence, and therefore further support to indicate some changes to staff practices and attitudes about relationships with service users following the training. Importantly, the qualitative data highlighted some of the benefits for both staff and service users of improving relationships and increasing social interaction between them - staff gained increased satisfaction and service users became more engaged in their social world.

The data suggested that sharing the moment and connecting were the most prominent of the relationship processes. Sharing the moment was characterised by banter in both settings, but hanging out also occurred. Staff reported that the training gave them permission to feel comfortable spending time together either by watching the TV or bringing the person closer to do joint activities. Connecting was observed through respectful and warm interchanges and taking the time to communicate more effectively. Neither of these processes require special equipment or preparation, but rather an awareness and commitment to improving relationships. Sharing the message was observed in the field notes occasionally, but usually reported in interviews. Sharing the message seemed to occur outside of observation times and involved conversations with families. As noted in previous studies (Clement & Bigby, 2010), there was very little information transfer between day and group home services about service user activities.

Several reasons for the limited change from a statistical perspective may stem from the method of data collection. Importantly, the sharing the message relationship process does not lend itself to momentary time sampling observations focussed on service users, as it is likely to involve staff-to-staff interaction. Thus some changes made by staff to the use of this process were unlikely to have been recorded by PEARmts. There is evidence from the qualitative data however that staff were beginning to take this aspect of their relationships with service users more seriously. The method of recording the PEARmts data meant that no data were collected during some periods, such as provision of personal care, during which social interaction was likely to occur. When service users were in private spaces, such as the bathroom, when no data were being collected, the observer reported hearing laughter and sounds of engagement during many of these periods of personal care. Overall, the experience of the data collection process suggested that social interaction occurred in intensive bursts, and thus may not have been captured well in the relatively short periods of data collection. Our data on inter-rater reliability, for instance, showed the very low occurrence of some processes during the period of observation. Additionally, many staff suggested that the period

chosen for observation was not optimal for capturing social interaction. Longer periods of observation spread across different days and times may potentially have provided a fuller picture of frequency of social interaction and relationships processes.

The qualitative data affirmed the face validity of the relationship model and the training resonated well with staffs' own experiences. Some staff saw the training as offering them little that was new but emphasised the importance of reinforcing an individualised stance towards services uses and providing an opportunity to take time out to focus on relationships with them. For all staff the model provided a framework for thinking about their relationships with service users and utilising the four specific processes to review their current knowledge of the service users. During the training staff brainstormed ideas about building on, adapting or extending existing routines to increase social interaction.

The time invested in the training was relatively short (four hours in total). Research indicates both skills and attitude training are required to effect staff behaviour change in front–line workers (Jones et al, 2001; McConkey, Morris & Purcell, 1999; Purcell, 2000). We were aware that the short training program did not follow what might be considered best practice as it did not include a practical element or follow up mentoring. Primarily this was due to the design of the study, and the time and financial resources available. A longer training period with follow-up would have rendered a Multiple Baseline design unfeasible by extending the period of data collection. The study has confirmed the viability of training based on the relationship model and the opportunity now exists to develop a more robust form of training based on the model that may be more effective in bringing about change to staff service user relationships. Multiple approaches might include providing models and coaching or follow up mentoring of the required behaviour, opportunities to reflect on thinking or attitudes (Ager & May, 2001); regular review processes (Beadle-Brown et al., 2014) video interaction guidance (Koski, Martikainen, Burakoff & Launonen, 2010) and trainer credibility (Bradshaw & Goldbart, 2013).

The practice of front line staff is affected by factors other than training. The staff in the present study were positive about the value and need for the relationship training. Perceived barriers related to organisational issues, such as pressure on their time created by staff absence or changes that diverted their attention from relationships with service users to tasks, and meant they often had little time to reflect on their practice. This type of barrier was outside the scope of the research to investigate. However, research investigating the implementation of active support is beginning to indicate the influence of practice leadership, organisational culture, and structures and processes on the practice of direct staff (Bigby,

2014a, 2014b; Bigby et al., 2012,). Domains of practice leadership include individual supervision, coaching and modelling of practice, and opportunity to reflect in staff meetings both individually and as a team on direct practice with service users (Beadle-Brown et al., 2014). Some of the qualitative data suggest that opportunities to reflect on relationships with service users through staff meetings may be useful. From the interview data, it would seem that some staff remembered little of the training content and remarked on the lack of follow through using staff meetings or other processes. Linking relationship training directly with individual supervision and team meetings offers the potential to enable staff reflection and practice development, thereby assisting in maximising the effects of the intervention.

The training stood alone and was not necessarily linked well to an overarching practice framework of these services or to other training programs that staff have attended. That some staff saw the relationship model as an ideal framework for guiding good practice suggests it needs to be more closely aligned with other person centred approaches and offered as part of a suite, rather than in the stand alone offering. Relationship training for staff supporting people with both cognitive and communication difficulties relies on a basic understanding of communication and the available augmentative and alternative communication supports. Linking relationship training with communication training or person centred active support may also enable staff to develop more sustainable positive practices.

The research was undertaken in organisations that were keen to develop positive relationship experiences for service users. However, it was evident that some staff struggled to see how this could be integrated into their day-to-day practice. They saw social interaction and relationships with service users as separate from doing tasks, almost as a bonus for service users and an activity that staff did when they had time free from meeting personal care needs, or which they did at weekends. It is in this respect that organisational culture and processes are important. One of the aspects of culture in group homes identified by Bigby et al. (2012, 2014a) was the tendency by staff in underperforming homes to segment the purpose of their work into separate tasks, rather than see all aspects of it as contributing to choice, inclusion, dignity and comfort of service users. In order to bring about change such that staff see their role in facilitating relationships, it is likely that job descriptions, role clarity and expectations may need to be revisited and revised by the organisation. In light of the similarity in results about relationship processes across both day program and group home settings, the cultural practices uncovered in group homes could be a starting point to more fully understand the culture of day services. Given that social inclusion is a goal for people

with severe and profound intellectual disabilities and these people predominantly live in group home and attend day services, promoting positive relationships and community inclusion urgently needs to be tackled.

Conclusion

The sustainability of the changes brought about by this project is largely unknown. According to anecdotal reports, Alan's quality of life has continued to improve with increased interactions beyond the staff in the study. The project was only short term. To sustain and build on changes, existing and new staff need some ongoing support from within their service in the form of coaching, mentoring, and reflective team meeting to revisit key processes around building relationships. Understanding the overarching purpose of their role and how doing tasks can include social interaction and relationships with service users, through clearer job roles, may also be important. This suggests greater investment may be needed by service delivery organisations in practice leadership, and practice frameworks aligned with their mission that are reflected across processes and structures of the organisation.

The response to the educational intervention by staff was positive. The relationship model proved to be a workable framework that was readily understood by staff. Data from observations and fieldwork demonstrated staff changed their practice to reflect more instances of each relationship process with a predominance of sharing the moment and connecting. The positive response by the staff to the relationship model and the findings of this study support several research and practice recommendations.

Recommendations

1. As this study was the first to attempt to measure relationship processes, further research, with modifications or additions to the PEARmts, is recommended. In particular, an improved strategy for recording data related to staff-to-staff interactions, when communicating about service users, is needed.

2. Organisations that provide support to people with severe and profound intellectual disabilities should ensure staff understand that social interaction with service users and enabling engagement are central to their role. This may be achieved through strategies to ensure the espoused values of organisations are modeled by managers, by managers, at all levels, understanding what good practice looks like and undertaking regular

observation of staff practice, regular performance reviews for all staff and embedding opportunities for staff to develop interaction skills in training calendars.

3. The findings indicate that staff practices and attitudes can be moved in the direction of more positive and rich social relationships with service users, and more frequent social interaction after only relatively brief intervention. It is recommended that this educational intervention be expanded to incorporate the following:

   a. staff time to reflect on their practices and relationships with service users, individually and during staff meetings, and follow up mentoring by the trainer;

   b. supervision, coaching and modelling by practice leaders in their organisations;

   c. updating individual support plans to include specific information on strategies to support communication social interaction and engagement;

   d. linking the training to an overarching person-centred practice framework; and

   e. linking training to other training, such as in communication, and person centred active support.

4. It is recommended that a training kit be developed that aligns positive relationships with other person centred training, such as active support. The kit would consist of

   a. An expanded version of the training manual used in this study, that provided more practice exercises supported by worksheets for each aspect of the relationship model: recognising individuality, sharing the moment, connecting, and sharing the message

   b. A schematic of the model and forms used to develop a schematic representation of a service user's social networks

   c. Online video examples of interactions demonstrating each relationship process

   d. Forms for staff to record observations and reflections of changes in processes for each service user.
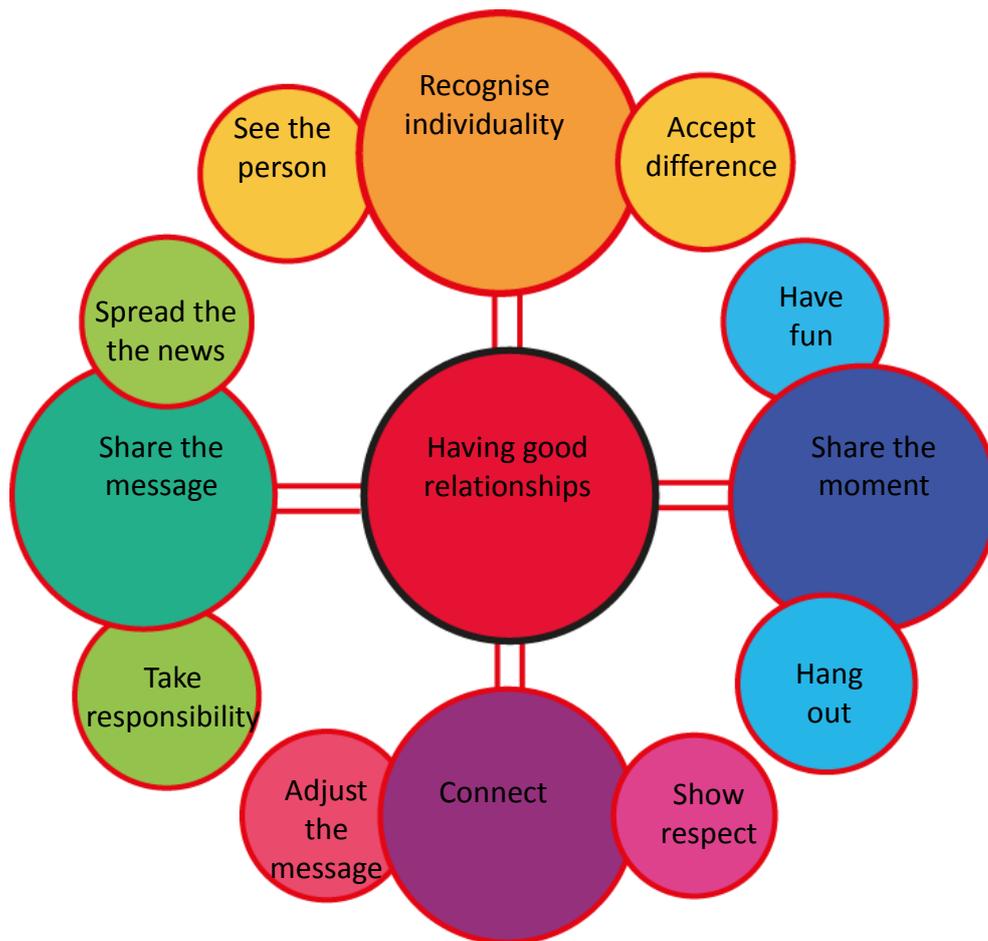
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The positive relationship model

Positive Engagement And Relationship Momentary Time Sampling Form

	No. Staff / No. SU's	Social interaction (clear and unclear social acts, communication attempt to speak)	Activity/task (meaningful activities e.g. fetching, carrying,)	Self-stimulatory/ repetitive behaviour	Challenging behaviour (inappropriate sounds, repetitive,)	Staff Assistance (help from others intended to facilitate	Other staff contact any contact that is not assistance,; praise,	Contact from other service users	Speech	Nonspeech Informal - gesture	Nonspech formal – pictures, signs	Recognises individuality	Shares the moment (routines/mimicry)	Has comedic fun (pranks, jest, banter)	Hanging out (contact/presence)	Connects (provide security, shows respect and warmth)	Adjusts the message (communicates appropriately)	Shares the message – takes responsibility (to understand behaviour)	Spreads the news (tells others things they need to know to assist interaction)	none	Missed	
	Staff/ SU	SI	Activity/Task	Self stim.	Other CB	Assis.	Other Contact	Contact SU	Speech	informal	Formal	Recog Individ.	Shares	Comedic fun	Hanging out	Connects	Adjust	Shares message	Spread news	None	Missed	Notes
1		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
2		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

Frequency of engagement and staff assistance pre and post intervention

	Day services			Group homes		
	Total	*Pre-intervention*	*Post-intervention*	*Total*	*Pre-intervention*	*Post-intervention*
Social Interaction	2.4	2.3	3.5	2.87	1.42	3.2
Activity	10.82	11.1	10.3	7.1	8.1	6.1
Total percent engagement	13.22%	13.4	13.8	9.97	9.5	9.3
Staff assistance	4.6	4.6	6.4	4.1	7.38	3.65
Other contact	4.9	2.37	2.95	5.4	6.74	3.52
Total percent staff assistance or contact	9.5%	6.97	8.99	9.5	14.12	7.17

Frequency of engagement and staff assistance across day services and group homes

	Day services			Group homes		
	DSA	*DSB*	*DSC*	*GHD*	*GHE*	*GHF*
Social Interaction	1.52	2.3	4.1	2	4	3.3
Activity	15.2	0.6	22.5	8.4	7.85	5.3
Total engagement	16.7%	2.9	26.1	10.4	11.85	8.6
Staff assistance	4.2	2.3	10.23	2.9	5.48	4
Other contact	3	2	6	3	8.54	4.57
Total staff assistance or contact	7.2%	4.3	16.23	5.9	13.02	8.57