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Development and psychometric properties of a scale for the measurement of rapport

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Development and psychometric properties of a scale for the measurement of rapport

Abstract

Purpose: To describe the development and initial evaluation of a new measure of the quality of relationships between people with intellectual disabilities and their supporters.

Design/methodology/approach: An earlier observational measure was simplified to produce the Rapport Rating Scale (RRS). Some psychometric characteristics of the RRS were evaluated through the rating, by three independent groups of participants, of videos depicting good, poor and neutral rapport.

Findings: Internal consistency of RRS ratings was high and highly significant differences in RRS total scores were found between groups.

Originality/value: There exist a limited range of measures of rapport. While further testing is required, the RRS provides an additional measure that may be of particular use in accessing the relationship preferences of individuals with more severe intellectual disabilities.

Key words: Intellectual disability, challenging behaviour, rapport, staff, positive behavioural support

Introduction

The World Health Organisation [Note i] states that “high-quality social connections are essential to our mental and physical health and our well-being. Social isolation and loneliness are important, yet neglected, social determinants for people of all ages”. Social relationships represent one of the domains of “quality of life” used to guide and assess service provision for people with intellectual disabilities (e.g. Schalock *et al.*, 2002) and are an important outcome in the provision of person-centred active support (Mansell and Beadle-Brown, 2012). The quality of relationships between people with intellectual disabilities and the staff supporting them matters, therefore, not least since for some individuals the relationships they have with staff may be the most significant (or even the only) ones they have (Antaki *et al.*, 2007, Giesbers *et al.*, 2019). Rapport has also been identified as an important element in the provision of positive behavioural support (e.g., PBS Academy, 2016, Ellwood, 2022, Tournier *et al.*, 2023) as, where good relationships do not exist, it is likely to be more difficult to implement effective support (Baker *et al.*, 2017, Embregts *et al.*, 2019, Kamana *et al.*, 2024). Being able to measure rapport is, therefore, important.

While the concept of rapport is widely used, it lacks a commonly agreed definition within the broader field of healthcare (English *et al.*, 2022). Within intellectual disability practice and research, rapport typically refers to the quality of relationships between people with intellectual disabilities and those who support them (Carr *et al.*, 1993). It is generally accepted that good rapport enhances support such as assistance with personal care, accessing activities in the community, learning new skills, encouraging communication and engagement in activities (Simons *et al.*, 2021, Ensor *et al.*, 2024, Parsons *et al.*, 2016). People with intellectual disabilities typically emphasise the importance of having a good relationship with the person providing their support (van Asselt-Goverts *et al.*, 2015, Giesbers *et al.*, 2019). Indeed, Guthrie and Beadle-Brown (2006) noted that their participants said they would be more likely to present behavioural challenges when supported by staff with whom they had a poor rapport.

Measurement of rapport, rapport building and consequent reductions in challenging behaviour were demonstrated by Magito McLaughlin and Carr (2005). Their study evaluated rapport between three individuals with intellectual disabilities and members of their support staff in a residential setting. Three measures were used: self-ratings by staff of their relationship with each individual; ratings by staff of their colleagues’ relationships with each person; and preference testing, in which each person with intellectual disabilities selected who would support them in an activity from all possible pairs of staff. Following rapport-building interventions with staff-individual combinations assessed as having a poor relationship, Magito McLaughlin and Carr demonstrated improvements in measures of rapport and reductions in challenging behaviour.

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While a seminal contribution showing the potentially significant value of assessing and building rapport, the measures developed by Magito McLaughlin and Carr also have some limitations. Staff self-ratings and staff ratings of other staff are subjective and may be prone to more general staff perceptions of themselves or their colleagues. Preference testing is likely to be difficult for individuals who, for various reasons, might struggle to make choices and is practically difficult to implement in group settings with large numbers of staff. Neither do the measures lend themselves to comparisons across settings. None of the measures have had widespread use and they are of unknown reliability and validity.

Some of these limitations have been addressed by the recent development of a new, observational measure of rapport (Hurman and McGill, 2023). This measure allowed the inclusion of people with intellectual disabilities who had little or no verbal communication through the partial interval recording of primarily non-verbal indicators of people with intellectual disabilities' rapport with support staff (see the left-hand column of Table I below). It proved possible to record these indicators reliably and findings of an initial study suggested the measure might provide a valid indicator of the quality of relationships between people with intellectual disabilities and their support staff. Furthermore, the measure could be employed to investigate differences in rapport across as well as within settings. However, it was also concluded that, outside of a research context, the measure was likely to be difficult to use. It relied on the use of video, data analysis was complicated and it would have been time consuming to use in everyday practice.

The aims of the current study, therefore, were: a) to develop a simplified measure of rapport that drew on the earlier observational measure but could be completed easily, routinely and quickly in everyday practice; and b) conduct an initial psychometric assessment of the new measure that would contribute to its validation.

Method

Developing the Rapport Rating Scale (RRS)

Broadly, three types of changes were made to the original measure – simplifying and reducing the number of codes used, changing the recording method and simplifying the method of scoring and analysis. Opportunities were also taken to produce the RRS using straightforward, succinct wording and a single page layout.

The code simplification process is outlined in Table I, showing the original codes in the left-hand column, a comment on why/whether they might be simplified in the centre column and final RRS items in the right-hand column. The recording method was changed from direct observation to the completion of a rating scale based on observation. RRS ratings (see Figure 1) were based on a tally count of the number of times particular rapport behaviours occurred during the period of observation. While scoring and analysis of the original measure required the use of trained

observers and relatively complex calculations of the occurrence of different codes, the RRS involved the simple summation of ratings as in other comparable scales such as the Active Support Measure (Mansell and Elliott, 1996). The final version of the RRS also reflected its informal piloting by five independent raters from different professional and educational backgrounds. Their comments contributed in particular to the instructions given to raters and to the scale's formatting.

Table I about here

Figure 1 about here

Psychometric assessment

Design

Three 5-minute video clips from the previous observational study (Hurman and McGill, 2023), were identified that provided examples of good, poor and neutral rapport, as reflected in their original coding. It had been intended to use these video clips in the current study. However, difficulties in obtaining additional consent meant that this was not possible. Instead, two English National Health Service (NHS) staff, with their informed consent and managers' agreement, rehearsed, then acted out scripted interactions between a person with an intellectual disability and a member of staff in three new video clips based on the original footage. The same staff took the same roles in the three videos. Videos were made in an NHS residential service in the South of England to provide a more realistic backdrop. In a between groups design, participants subsequently used the RRS to rate the three videos.

Participants

Participants were identified primarily from clinical contacts within the NHS Trust where the first author was employed and students doing courses on intellectual/developmental disability. Participants came from a wide range of professional or trainee professional groups (the largest being nursing, psychology/behaviour support, and therapy professions). All participants had been or were involved in some way in services for people with intellectual disabilities. Participants had not been involved in the earlier study, or in making or piloting videos prior to the current study. The participants were aware that they were being asked to record indicators of rapport but were blind to their group membership. A power analysis (Cohen, 1992) suggested that groups having a minimum of $N = 21$ would allow for a one-way analysis of variance to detect a large effect size (0.4) at $\alpha = .05$ with an acceptable level of power (0.8). Table II shows that the three groups

achieved the minimum required N and had similar demographic and professional characteristics.

Procedure

The three video clips were allocated by rotation to participants making up three independent groups – neutral rapport video (video one) poor rapport video (video two), and good rapport video (video three). To be specific, the first person agreeing to participate was given a participant pack consisting of the Participant Information Sheet, Participant Consent Form, a blank RRS form, and a CD rom of video one, to be viewed and rated. The next person was given the same pack but with a CD rom of video two, the third with a CD rom of video three and so on. Participant packs were given to 107 potential participants so that 36 received video one, 36 video two and 35 video three. Videos were marked only by number.

All clips started with the same introduction to the RRS and the task. Participants were introduced to Diane (the ‘member of staff’), and Lee (the person with an ‘intellectual disability’ who lives at the service where Diane works). Still pictures of both were shown so that participants were clear that it was Lee’s behaviour they needed to observe and rate. Participants were asked to view and rate their assigned video using the RRS and provide some background information about their qualifications and professional background. Subsequently, participants were given one reminder to return their data and a deadline for final completion of the RRS. All participants gave their informed consent to participate in the study.

Of the 107 participant packs given out, 79 complete packs were returned. RRS forms were checked to ensure tally counts and ratings were consistent. In a small number of cases, participants wrote down the tally counts rather than ratings or did not add tally counts correctly. In such instances ratings were adjusted to reflect the tally counts made by participants and the rating scale score corrected as required.

Table II about here

Ethics and Governance

Ethical approval was obtained through the National Research Ethics Service as a Substantial Amendment to the original observational study. The amendments to the study received research governance approval by an NHS Trust in the South of England.

Analysis

Cronbach’s alpha was used to examine the internal consistency of ratings made using the RRS. RRS total score means and standard deviations were calculated across the three groups. As Kolmogorov-Smirnov tests suggested the poor rapport

group data were not normally distributed, group medians were compared by the Kruskal-Wallis nonparametric analysis of variance with Mann-Whitney tests then used to investigate differences between pairs of groups. To manage the risk of multiple comparisons leading to type 1 errors, a Bonferroni correction was used to set the p required for significance at 0.017. Participants' years of experience of working with people with intellectual disabilities were examined to determine whether there was a relationship with RRS scores using Spearman's rho correlations. All statistics were computed within SPSS.

Results

Descriptive statistics and internal consistency

Table III shows that the three groups differentially rated videos with the RRS in the expected manner. Cronbach's alpha was .875, indicating a high degree of internal consistency.

Table III about here

Between group differences

Kolmogorov – Smirnov (KS) tests were carried out on data for each group. For the neutral rapport group $D(27) = 0.21$, exact $p = 0.20$, for poor rapport $D(24) = 0.29$, exact $p = 0.04$, and for good rapport $D(28) = 0.10$, exact $p = 0.93$. Kruskal-Wallis test results are shown in Table IV. RRS total scores were significantly different between groups.

Table IV about here

RRS total scores were significantly higher in the good rapport group compared to the neutral rapport group ($U=29.48$, $p<0.001$) and the poor rapport group ($U=50.77$, $p<0.001$), and in the neutral rapport group compared to the poor rapport group ($U=21.29$, $p<0.01$).

Participant experience level and RRS results

Spearman correlations between participants' years of experience of working with people with intellectual disabilities and their RRS scores were non-significant for all video groups: good rapport ($r = .115$, $p = .574$), neutral rapport ($r = .203$, $p = .331$) and poor rapport ($r = .072$, $p = .751$).

Discussion

The current study sought to help address existing limitations in the measurement of rapport. The Rapport Rating Scale (RRS) was developed and piloted from a previous observational measure. The 16-item scale was then completed by three independent

groups of professionals and trainees to rate videos illustrating good, neutral or poor rapport behaviour towards carers. Internal consistency of RRS ratings was high and highly significant differences in RRS total scores were found between groups, suggesting that study participants were able to use the RRS to discriminate good, neutral and poor rapport. Participant experience was not significantly correlated with RRS score. Anecdotally, the RRS was reported as simple to use by many study participants.

The findings indicate that professionals and trainees, working with people with intellectual disabilities, were able to use the RRS to discriminate between good, neutral or poor rapport towards carers, from a role play of a person with an intellectual disability interacting with a carer. Successful use of the RRS did not require extensive experience, an important factor in a field in which staff turnover can be high. The results suggest, therefore, that the RRS can provide meaningful information about one aspect of the current relationship between a person with a disability and those supporting that individual. The measure directly reflects the behaviour of the person with disabilities rather than the perspective of the person supporting the individual. Further, its non-verbal focus may make it especially relevant to looking at relationships involving those with more severe disabilities.

Limitations

The study had a number of limitations that could be addressed in further research. Ratings were made from video. It may be more difficult to use the measure accurately during live observation. Videos employed role-playing participants rather than being of actual interactions including people with intellectual disabilities, though they were based on previously observed interactions. The brief nature of videos precluded the occurrence of all indicators of rapport rated by RRS items. Minor calculation errors were made by a small number of raters suggesting the need for slightly more detailed instructions to increase the accuracy of recording. The focus of the RRS was on the measurement of rapport in the relationships of people with intellectual disabilities with limited or no verbal communication. Further research is needed to test the measure with people who have greater verbal ability. More psychometric assessment is also clearly needed including the investigation of inter-rater reliability.

People with intellectual disabilities are not a homogenous group. The indicators of rapport that a person presents may differ depending upon their cultural background, gender and co-occurring disabilities such as visual or physical disabilities. For example, one individual's physical or sensory limitations may restrict their ability to approach or follow carers. Where this is a significant issue for an individual it may be possible and necessary to personalise the codes used, prior to observation, so that they are a better fit for the person being observed.

Conclusions

In the current study we developed a simplified measure of rapport – the Rapport Rating Scale (RRS) - that could be completed easily, routinely and quickly in everyday practice. Initial psychometric assessment suggested that the 16-item scale had good internal consistency and raters were able to use the RRS to discriminate good, neutral and poor rapport.

The RRS is not presented as a replacement for other measures of rapport. It may, however, be seen as a useful addition to a “tool kit” of such measures, alongside those of Magito McLaughlin and Carr (2005) and Hurman and McGill (2023). Capturing the experiences of professionals using these measures may yield helpful data about the situations in which each measure is most useful and about their general utility in supporting the development of good quality relationships between people with intellectual disabilities and their supporters.

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Notes

- [i] <https://www.who.int/teams/social-determinants-of-health/demographic-change-and-healthy-ageing/social-isolation-and-loneliness> (Accessed 20 April 25)


Figure 1: Rapport Rating Scale

Rapport Rating Scale

Observer name:	Age:	Number of years working in intellectual disability services:	
Gender:	Date:	Profession or current training:	

Name of person being observed:

Staff name:

Scale 0 = not seen during observation 1 = seen once during observation (or less than half the observation period) 2 = seen 2-3 times during observation (or half to three-quarters of the observation period) 3 = seen more than 3 times during observation (or more than three-quarters of the observation period)		
INDICATORS OF RAPPORT	Tally  times seen	Rate 0-3
Movement (of own volition)		
★ Stays directly beside stationary carer (touching distance)		
★ Approaches stationary carer		
★ Follows moving carer		
Positive facial expression		
★ Smile, giggle or laugh which is directed at carer		
Vocal sounds and speech		
★ Directs words or word approximations at carer		
★ Vocalises while singing or joking which is directed towards a carer and typically accompanied by smiles / laughing		
★ Asks for an absent carer or calls a carer by name		
Physical contact		

★ Makes affectionate physical contact with carer e.g. cuddling, hugging, kissing or holding carer's hand		
★ Makes brief physical contact with carer e.g. touching, lightly tapping, stroking or high fiving carer		
★ Makes persistent physical contact with carer e.g. leading carer by the hand to take them somewhere or show them something		
Gestures		
★ Gestures to carer in directing manner e.g. beckoning or pointing		
★ Gestures agreement to carer e.g. thumbs up or nodding head		
★ Uses formal or informal sign language towards carer		
★ Mimics carer in order to joke		
Eye gaze		
★ Moves eyes or head in order to track a moving carer		
★ Looks at stationary carer		

Observe the person with a disability not the staff member. Tally each rapport indicator you see. Make a rating between 0- 3 for each indicator of rapport marked with a red star (★). (There should be 16 rapport indicators rated in total)

Table I: Summary of original codes and changes made for RRS design

Original codes	Changes made	Final RRS codes
Proximity <ul style="list-style-type: none">•Approach stationary carer• Close to stationary carer/Maintain proximity• Follow moving carer	Largely unchanged apart from minor wording. Emphasis more clearly put on the active movements of the person with intellectual disabilities to maintain or gain proximity with the carer.	Movement (of own volition) <ul style="list-style-type: none">•Stays directly beside stationary carer (touching distance)•Approaches stationary carer•Follows moving carer
Positive facial expression <ul style="list-style-type: none">• Smiling, giggling or laughing	Minor wording change to reflect importance of behaviours being directed at carer.	Positive facial expression <ul style="list-style-type: none">•Smile, giggle or laugh which is directed at carer
Vocal sounds, speech <ul style="list-style-type: none">•Word approximations•Vocalisations while smiling•Singing, joking•Asking for an absent carer or calling a carer by name	Vocalisation while smiling was infrequently coded on the observational measure so combined with the singing/joking code. Otherwise, only minor wording changes.	Vocal sounds and speech <ul style="list-style-type: none">•Directs words or word approximations at carer•Vocalises while singing or joking which is directed towards a carer and typically accompanied by smiles / laughing•Asks for an absent carer or calls a carer by name
Physical contact <ul style="list-style-type: none">•Cuddle/hug•Kissing•Touching•Lightly tapping	Many physical contact codes were rarely used in the observational study. Therefore, combined into smaller number of codes and wording clarified.	Physical contact <ul style="list-style-type: none">•Makes affectionate physical contact with carer e.g. cuddling, hugging, kissing or holding carer's hand•Makes brief physical contact with carer e.g.

<ul style="list-style-type: none"> •Stroking •Hand holding •High five •Leading carer 		<p>touching, lightly tapping, stroking or high fiving carer</p> <ul style="list-style-type: none"> •Makes persistent physical contact with carer e.g. leading carer by the hand to take them somewhere or show them something
<p>Gestures</p> <ul style="list-style-type: none"> •Beckon •Pointing •Mimicking •Thumbs up •Sign language or attempts •Nodding head 	<p>Beckoning and pointing combined. Thumbs up and nodding head combined. Wording clarified.</p>	<p>Gestures</p> <ul style="list-style-type: none"> •Gestures to carer in directing manner e.g. beckoning or pointing •Gestures agreement to carer e.g. thumbs up or nodding head •Uses formal or informal sign language towards carer •Mimics carer in order to joke
<p>Eye gaze</p> <ul style="list-style-type: none"> •Tracking a moving carer /moving eyes or head •Looking at a stationary carer 	<p>Wording clarified.</p>	<p>Eye gaze</p> <ul style="list-style-type: none"> •Moves eyes or head in order to track a moving carer •Looks at stationary carer

Table II: Participant information by group

Group	Age	Gender	Experience in years	Background
Film one (neutral rapport) N = 27	Range 21 – 55 Mean 37.7 years	M 4 F23	1 - 34	NHS Staff x 16 Community Staff x 2 University Staff x 2 Students x 7
Film two (poor rapport) N =24	Range 23 – 63 Mean 40.4 Years	M 5 F19	0 - 35	NHS Staff x 17 Community Staff x 1 University Staff x 3 Students x 3
Film three (good rapport) N=28	Range 21 – 56 Mean 37.4 Years	M 10 F 18	0 - 35	NHS Staff x 19 Community Staff x 1 University Staff x1 Students x 7

**Table III: Measures of central tendency and dispersion for RRS total scores
(minimum 0, maximum 48)**

Rapport Video Group	N	Mean	SD	Median	Range
Good	28	23.61	4.19	24	15-30
Neutral	27	9.33	1.78	9	6-12
Poor	24	5.54	2.13	6	3-12
Combined	79	13.24	8.40	16	3-30

Table IV: Between group differences in RRS total scores

Rapport Video Group	N	Mean Rank	Chi Square	df	Sig.
Good	28	65.50	64.78	2	.000
Neutral	27	36.02			
Poor	24	14.73			