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Health & Social Care in the community

The Hopkins Rehabilitation Engagement Rating Scale - Reablement Version (HRERS-RV): Development and Psychometric Properties

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Abstract

Patient or user engagement with health and social care interventions is receiving increased attention and interest within practice settings and research. An English evaluation of three reablement services wished to include a measure of user-engagement so as to explore its association with outcomes. As no measure of reablement engagement existed, an existing measure designed for use with physical rehabilitation patients (the Hopkins Rehabilitation Engagement Rating Scale) was adapted and its psychometric properties tested. The adapted version was completed by reablement staff at the time an individual (n=129) was discharged from one of the three reablement services. Outcomes data (Barthel Index, Nottingham Extended Activities of Daily Living Scale, General Health Questionnaire-12) collected by the evaluation study at baseline (that is, at entry into reablement), discharge and 6 months post-discharge was used for some psychometric testing. Internal consistency and construct, predictive and discriminant validity were investigated. The adapted scale measured a single construct and had good internal consistency. Tests of predictive and discriminant validity were positive. Findings from a separate, small-scale (n=31) test – retest study offer an early indication that this is acceptable. There was, however, evidence of a ceiling effect and we consider ways this may be ameliorated. The Hopkins Rehabilitation Engagement Rating Scale – Reablement Version offers a means by which user engagement in reablement can be measured using a staff-completed instrument. The association between engagement and reablement outcomes, revealed when testing for predictive validity, supports the argument for greater attention and investment in research on user engagement in reablement. More broadly, researching engagement within the context of an intervention often delivered by multiple practitioners offers the opportunity to further understand this concept which, in

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the past, has particularly focused on interventions delivered by a single practitioner. In addition, future work should include developing a companion measure completed by service users.

Keywords: reablement, engagement, social care, older people, outcomes

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What is known about this topic?

- For some healthcare interventions, there is good evidence that patient engagement impacts on outcomes.
- Qualitative evidence indicates, practitioners and service users believe user engagement with reablement is important to supporting positive outcomes.
- There is, however, no measure of engagement with reablement. Thus understanding of this concept within the context of reablement, and its impact on outcomes, has not been investigated.

What this paper adds:

- It reports the successful adaptation of an existing measure of physical rehabilitation engagement to a version suitable for use in reablement.
- It discusses the importance of measuring engagement in future evaluations of reablement.
- It considers current understandings of engagement within a context of an intervention often delivered by multiple staff.

INTRODUCTION

Recent years have seen an increase in the use of interventions to prolong or restore independence, minimise reliance on social care or address preventable or unplanned hospital admissions (Aspinal, Glasby, & Rostgaard, 2016; Tessier, Beaulieu, McGinn et al., 2016). Reablement (also known as restorative care) is one such intervention, aiming to restore independence with respect to activities of daily living and thus reduce, or prevent an increase in state expenditure on health and social care provision (Metzelthin, Zijlstra, Rossum van et al., 2017; Tessier et al., 2016).

Reablement is a time-limited, intensive intervention delivered in the home (or other usual place of residence). It is implemented following discharge from an acute hospital admission, as a preventative measure to avoid re/admission to hospital or residential care, or to reduce the need for home care. Following specialist assessment, an individualised, goals-focussed plan is developed to restore an individual's functioning with respect to basic and instrumental activities of daily living (ADLs) (eg. getting around the home/outside, eating, continence, personal hygiene, making meals, managing medication) associated with living as independently as possible.

'Reablement practitioners' (lower grade staff trained in reablement but not holding aprofessional qualification) usually visit at least once per day to implement this plan, helping the person regain skills and confidence. Equipment or minor adaptations may be used to support this. The overall ethos of reablement – to support and enable people to do things for themselves – contrasts with traditional home care which "does things" to or for people, thereby promoting dependency (Metzelthin et al., 2017; Resnick, Boltz, & Galik, 2012). In

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England, the typical duration of the intervention is 4-6 weeks, with the frequency and duration of visits expected to reduce over this period (Ashworth, Longmate, & Morrison, 1992).

Evidence regarding the effectiveness of reablement is limited and of variable quality. A recent evidence review concluded that ''[t]here is a moderate amount of moderate quality evidence that reablement is more effective compared with conventional homecare'' (p. 137) (National Institute For Health And Care Excellence, 2017). Previous research has also identified factors which may be associated with outcomes (Ariss, 2014; Dundee City Council and Tayside NHS, 2010; Hjelle, Tuntland, Forland et al., 2017; Rabiee & Glendinning, 2011) and the characteristics of the service user (Ghatorae, 2013; Glendinning, Jones, Baxter et al., 2010; Hjelle et al., 2017; Rabiee & Glendinning, 2011)(*Reference removed for review*). These include service user expectations, including their understanding that reablement is different to traditional homecare; their motivation (e.g. wanting to be discharged home or to remain at home); accepting the need for help; and the nature of the therapeutic alliance (Higgins, Larson, & Schnall, 2017; Moe, Ingstad, & Brataas, 2017) (*Reference removed for review*).

Such findings align with conceptual understandings of intervention/patient engagement (Bright, Kayes, Worrall et al., 2015; Higgins et al., 2017). Thus Bright et al (2015) refer to the development of a "connection" (p.15) between practitioner and patient, or therapeutic programme, and the patient becoming an "invested collaborator" (p.15) in the intervention. Others stress that engagement is a purposeful act, with collaboration and cooperation being an active choice on the part of the patient and done in order to maximise outcomes or improve their experience of receiving an intervention (Higgins et al., 2017).

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Within physical rehabilitation, there is growing evidence that engagement with an intervention impacts on short- and medium-term outcomes (Morghen, Morandi, Guccione et al., 2017). This has led to calls to find effective ways to increase or support engagement with an intervention, both on the part of service users and, interestingly and more recently, practitioners (Bright et al., 2015). Given that the essence of reablement is active participation by the service user, it is perhaps surprising that, to date, this construct has not been specifically investigated within this context. The absence of a valid and reliable measure of engagement may be one reason for this. This paper reports the adaptation, and psychometric properties, of a measure of patient engagement used in physical rehabilitation (the Hopkins Rehabilitation Engagement Rating Scale (HRERS) (Kortte, Falk, Castillo et al., 2007)) for use in reablement contexts (referred to as HRERS-Reablement Version (HRERS-RV)).

Recent conceptual reviews of engagement have concluded that engagement is both an internal *state* (reported by the individual or observable in their behaviour) and a *process* co-constructed by the patient/service user and the practitioner (Bright et al., 2015; Higgins et al., 2017). Within this conceptual framework, the HRERS-RV can be regarded as a practitioner-reported measure of a service user's state of engagement.

METHODS

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Design

Once created by the research team, the HRERS-RV was contained in a battery of measures used in an evaluation of reablement services in England (*Reference removed for review*). This evaluation investigated reablement outcomes at discharge and 6-months post-discharge and included an exploration of the impact of service and individual characteristics on outcomes. This paper is solely concerned with reporting the adaptation and psychometric testing of the HRERS-RV. Findings from the evaluation are reported elsewhere (*Reference removed for review*).

Sample

Three reablement services, located in different areas in England, participated in the evaluation. Service users were recruited between November 2016 and July 2017. Inclusion criteria were: i) accepted reablement; ii) aged 18 years or over; iii) able to give informed consent. Details on recruitment processes are provided elsewhere (*Reference removed for review*). The total number of individuals recruited was 186, discharge data was collected from 129 participants. Sixty-four participants were followed up at 6-months post-discharge.

Ethical Considerations

The study was approved by an NHS Research Ethics Committee (REC reference: *removed for review*).

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Data collection

The HRERS-RV was completed by a reablement practitioner when a study participant was discharged from the service.

Outcome measures

Outcome measures used to test the HRERS-RV's predictive validity are described below. These were completed (by the service user or the reablement practitioner) as part of the evaluation study at the start of receiving reablement (baseline), at discharge and at six-months after discharge. In terms of service user reported outcomes, baseline and discharge measures were administered by a member of the research team during a home visit. Six months post-discharge data were collected either by a home visit or via postal administration.

The Barthel Index (Mahoney & Barthel, 1965): based on observation, this practitioner-reported index measures patients' functional status across ten domains: faecal incontinence, urinary incontinence, personal care (cleaning teeth, shaving), using the toilet, feeding, transfers (e.g. chair to bed), walking, dressing, climbing stairs and bathing (or showering). Scoring of individual domains range between 0-15 (at 5 point intervals): domains vary in the number of intervals offered. The total score is used which ranges from 0 (no functioning) to 100 (independent functioning).

Nottingham Extended Activities of Daily Living (NEADL) Scale (Nouri & Lincoln, 1987): a self-report measure of functional ability, or independence, with respect to a wide range of

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activities of daily living. It comprises 22 items, grouped into four areas of activities of daily living: 'mobility' (six items), 'kitchen' (five items), 'domestic' (five items) and 'leisure' (six items) activities. Each item is scored on the response to four options: No (0 points), With help (0 points), On my own with difficulty (1 point), and On my own (1 point). The maximum score is 22, with higher scores indicating greater independence.

General Health Questionnaire (GHQ-12): The GHQ-12 (Goldberg, 1972) measures self-reported mental health. It focuses on two major areas – the inability to carry out normal functions (e.g. decision-making, enjoying day-to-day activities) and the appearance of new and distressing experiences (e.g. low confidence, feeling depressed,). A 4-point response scale is used: better than usual, same as usual, less than usual, much less than usual. When computing the score, positive answers (better/same as usual) are scored as 0, and negative answers (less/much less than usual) are scored as 1, hence a higher total score indicates worse mental health. The GHQ is regarded as a robust indicator of minor psychiatric morbidity (Pevalin, 2000).

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Instrument Development

HRERS – the original measure

The Hopkins Rehabilitation Engagement Rating Scale (HRERS) is a five-item, practitioner completed scale. It was developed in the United States to measure engagement with physical and functional rehabilitation interventions (Kortte et al., 2007). It is one of a very small number of measures of patient/service user engagement for use within physical

rehabilitation contexts. Importantly, unlike others (Bright et al., 2015), it is grounded in a conceptual framework of engagement, developed by the authors following a review of existing literature. Thus the scale authors defined the construct of 'engagement' as comprising five dimensions: attendance, need for physical or verbal prompts to participate, positive attitude towards the therapy activity, acknowledgement/acceptance of need for services, and active participation. Each dimension is represent by one item (see Figure 1). A six-point response format (never, seldom, some of the time, most of the time, nearly always, always) is used to report the observed frequency, or consistency of each dimension. Good psychometric properties are reported (Kortte et al., 2007).

[Figure 1. Here]

Adaptation of the HRERS

Permission was sought from the scale authors (corresponding author K. Kortte) to adapt the HRERS for use with reablement. Aside from replacing the word 'rehabilitation' with 'reablement', adaptations were needed to make it appropriate for use with reablement in a UK context.

First, the fundamental ethos of the reablement approach is restorative (with respect to independent living skills), whereas physical rehabilitation is based on notions of recovery from injury, though it may incorporate reabling approaches. Second, reablement is delivered in people's homes, whereas physical rehabilitation often requires individuals to travel to clinics or is provided whilst an inpatient. This required the concept of 'attendance' (item 1) - to be revised so that it was meaningful to reablement.

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Third, HRERS item 2, which captures whether verbal or physical prompts or cues were required, required significant adaptation. This was because of differences in the way practitioners' verbalisations and physical cues are in rehabilitation compared to reablement. Verbal instruction/encouragement and touch/physical prompts are core elements of reablement practice. For example, providing instructions or offering advice, supporting mobility or a particular posture, and building confidence by verbal encouragements. In contrast, within physical rehabilitation, the extent to a therapist uses verbal cues or physical prompts is regarded as an indicator of the intensity of support required from the therapist to secure engagement, with cognitive deficits and/or low/negative mood being key reasons greater intensity of support. This item was therefore modified to *explicitly* ask about the degree to which a service user's cognitive state (in terms of cognitive decline or low/negative mood) was perceived to have affected their ability to take part in reablement.

Finally, given reablement practitioners do not hold a professional graduate qualification, we simplified language and sentence structure.

Two authors (BB, ALF) – with collective expertise in scale development and occupational therapy within rehabilitation and reablement settings – drafted an adapted version which sought to ensure items remained true to their conceptual domain but were meaningful to the reablement context. This first draft, and the rationale for the changes made, was shared with the wider research team and the Study Steering Committee (which included reablement practitioners). Additional minor modifications were made to language and sentence structure based on feedback.

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Cognitive interviews (Willis, 2005) were then used to test the adapted version with 10 reablement practitioners based in two reablement services. Interviews were conducted in two waves. The first wave (n=5) revealed that additional information was required in a couple of items to ensure they were interpreted as intended. It also identified that modification of sentence structure in one item would be likely to improve comprehension. Finally, the word 'seldom' (a response option) was not consistently understood and interviewees' suggested replacing it with 'rarely'. These findings were reviewed by the research team and revisions made to the scale. The revised version was then tested in a second wave of interviews (n=5). These interviews revealed no further concerns. The final version was shared with the lead author of the HRERS (KTB; formerly Kathleen Kortte) who approved the adaptations made.

Table 1 sets out the items comprising the HRERS-Reablement Version against the conceptual domains and the corresponding item in the original HRERS.

[Table 1. Here]

The final version of the HRERS-RV is presented in Box 1.

[Box 1. Here]

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A total HRERS-RV score is calculated by summing up the scores on each of the five items (range 0-30), with item 2 reverse scored. A higher score represents greater engagement with the intervention.

Instrument validation

All data were double-entered, cleaned, and analysed using STATA 14.2 (24).

Testing threats to validity of results

The characteristics of the sample (e.g. age, gender, reason for referral, involvement of informal carers, health incident leading to need for reablement, number of health co-morbidities) at each time-point (baseline, discharge, 6 months post-discharge) were compared to identify possible sources of bias. Chi-square was used to test for significant differences in the distributions of categorical variables across the three time points. T-tests were used to test for differences in mean age of respondents across time points.

To test whether or not the adapted measure performed in a uniform way across the population of individuals using reablement, we explored whether the above demographic and intervention-relevant characteristics were associated with HRERS-RV scores using linear regression. The significance level was set at α=0.01.

Reliability testing

Internal consistency was evaluated using Cronbach's alpha. Test, re-test reliability was explored by calculating the correlation in scores at the two time-points (test, re-test) and

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testing for significant difference in mean total score at the two time-points using a paired T-test.

[Note: Test-re-test data collection was carried out independent of the evaluation study. Service providers involved in the HRERS-RV adaptation work (providing access to staff for cognitive interviews) provided access to staff (n=31) in three reablement services (none was involved in the evaluation). Reablement practitioners based in these services completed the HRERS-RV with respect to the same individual recently discharged from their service, and then completed the measure again – with respect to the same individual - 2 weeks later. Each member of staff completed the HRERS-RV with respect to one service user.]

Analysis

Construct validity was tested using factor analysis - namely, iterated Principal Axis Factoring method - using orthogonal varimax rotation. This approach was used because we wanted to estimate the degree of covariance across the five dimensions and this method was shown to be more accurate in reproducing population loadings than Principal Components analysis (Russel, 2002; Widaman, 1993). The Kaiser-Meyer-Olkin Measure (KMO) was used to verify the sampling adequacy for the analysis. KMO values range from 0 to 1, indicating the proportion of variance in the variables that might be caused by underlying factors. KMO values between 0.8 and 1 indicate that the sampling is adequate. Only factors with an eigenvalue greater than 1 were considered significant. In addition, the scree plot was examined for inflexions indicating distinct factors. Items with a rotated factor loading of at least 0.6 and no cross-loading to other factors were considered significant (Tabachnick & Fidell, 2014).

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Predictive validity

Based on existing literature (Ashworth et al., 1992; Morghen et al., 2017), we expected the level of engagement with reablement to be associated with functional status outcomes at discharge from the intervention, and with longer-term outcomes (Kortte et al., 2007). The HRERS-RV asks staff to report on an individual's engagement across the entire duration of reablement. Hence it can be used to predict functional outcomes at discharge and longer-term outcomes.

We assessed the tool's predictive validity by testing the association between HRERS-RV score and scores on outcome measures at discharge (Barthel Index; NEADL scale) and 6 months post-discharge (NEADL scale). Linear regression models were run with scores on these measures outcome variables and the HRERS-RV score as a predictor. Each model controlled for respondents' functional status scores at baseline (or at discharge when looking at 6-months post-discharge outcomes) and for clustering within the data introduced by data collection across three sites. We performed a sensitivity analysis (Thabane, Mbuagbaw, Zhang et al., 2013) to assess whether a binary version of HRERS-RV scores had similar predictive validity as its scale version (originally, the HRERS was tested as a categorical variable (Kortte et al., 2007)). The binary score was created using a data-driven cut-off point: the median score (=27). Those scoring 27 or more were categorised as 'high engagement', and those scoring lower 'moderate or low engagement'.

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Discriminant validity

Mental health was hypothesised to impact engagement. Discriminant validity was tested by comparing regression models with the HRERS-RV score versus the mental health (GHQ-12) score as predictors of functional outcomes. If the HRERS-RV had good discriminant validity, it would be a stronger predictor of functional outcomes than GHQ-12 scores alone.

FINDINGS

Research population

Participant characteristics are summarised in Table 1. We found no evidence of statistically significant differences in the characteristics of the samples at the different data collection time points. Chi-square tests did not produce significant p values (at $\alpha = 0.01$ threshold) ranging from 0.64 ('referral reason') to 0.91 ('help from friends and family'). Two-sample t-tests comparing the mean age of respondents at the different time points did not produce significant results (mean diff baseline - discharge=0.06, p=0.95; mean diff discharge - 6 months post-discharge=0.2, p=0.83).

[Table 1. Here]

At each time-point, the majority of respondents (57-60%) lived alone (Table 2) and were female (68%). Over half had had been referred to reablement because they were judged to be at risk of no longer being able to live at home independently ('remain at home'), the remainder had been referred for reablement at the point of being discharged from hospital

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following an unplanned admission ('return home'). In terms of co-morbidities, musculoskeletal problems (e.g. falls and fractures), were implicated in referrals to reablement of over 59 per cent of the sample. At each time point, the great majority (89%) were receiving informal care from friends and family.

[Table 2. Here]

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HRERS-RV summary statistics

The mean HRERS-RV score (n=126) was 26.1, median 27 (minimum possible score = 0; maximum = 30). The top 25% of the score distribution consisted of maximum scores, indicating a ceiling effect.

Eliminating threats to validity of results

Some respondent characteristics (age, gender, reason for referral, living situation, informal carer involvement, type of co-morbidiy) were associated with HRERS-RV scores (see Supporting Material). However, although these associations are statistically significant, their effect sizes are close to zero (ranging between 0.13- 1.8)

Reliability testing

Cronbach's alpha correlation coefficient indicated that HRERS-RV is a uni-dimensional scale with high reliability α=0.89 (95%CI: 0.85-0.93).

Test – re-test scores (n=31) were compared using Pearson's correlation. The correlation coefficient between the two time points was 0.71, indicating an acceptable level of test – re-test reliability. The mean total scores were 25 (test) and 24.1 (re-test). This difference was not statistically significant (diff=0.9, P-value=0.114). These are preliminary results given the small sample size.

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Construct validity

An initial correlation matrix confirmed a significant amount of correlation between items. Bartlett's test showed that the correlations between the five components were overall significantly different from zero ($p<0.001$, $N=126$). The determinant (det) of the correlation matrix indicated that there was no extreme multicollinearity across the variables, whilst not being completely unrelated (det=0.018). The Kaiser-Meyer-Olkin Measure had a value of 0.82, which indicated good levels of sampling adequacy for the analysis.

One factor had an eigenvalue >1 (eigenvalue=3.28), explaining over 80% of the total variance. A scree plot showed a clear inflexion after the first factor, justifying keeping one single factor in the analysis. The (rotated) factor loadings for Factor 1 ranged from 0.40 to 0.95 (Table 3). Item 2 - ability to take part in reablement affected by memory difficulties or low mood – had a factor loading of 0.40. It was, however, decided to retain this item in order to replicate the conceptual underpinning of the original HRERS (where all items had a factor loading between 0.73 and 0.95 (Kortte et al., 2007)).

[Table 3. Here]

Predictive validity

Table 4 provides descriptive statistics on respondents' functional status scores at baseline, discharge and 6-month follow-up. Between baseline and discharge, the mean Barthel score improved by 10.8 points, whilst NEADL scores were static. By 6 months post-discharge, however, mean and median NEADL scores had increased by 2 and 3 points respectively.

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Standard deviations are slightly larger at successive time points, indicating a wider diversity in outcomes as time goes on.

[Table 4. Here]

There is strong evidence of a positive association between HRERS-RV score and functional outcomes at discharge – on both the NEADL and Barthel measures (Table 5). At 6-months post-discharge, a similar - yet weaker - association was found between the HRERS-RV score and functional outcomes as measured by the NEADL Scale.

[Table 5. Here]

Next, the analysis was repeated using the binary version of the HRERS-RV score. This analysis replicated the findings based on total HRERS-RV score (reported above). Thus scoring 27 or higher on the HRERS-RV had, on average, 11.9 point higher assessor-reported functional status scores at discharge (Barthel Index) and 1.4 point higher self-reported functional status scores (NEADL scale) compared to those who scored under 27, see Table 6. This association was not significant at 6 months post-discharge.

[Table 6. Here]

Discriminant Validity

The HRERS-RV summary score did not correlate with the GHQ-12 score at baseline (r=-0.0811). Moreover, the baseline mental health score was not a significant predictor of

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functional outcomes (Barthel: p=0.145, CI= -1.033, 0.152; NEADL: p=0.739, CI=-0.229, 0.323) at discharge.

DISCUSSION

This paper reports the adaptation of the Hopkins Rehabilitation Engagement Rating Scale (Kortte et al., 2007) for use within the reablement context, and the psychometric properties of this adapted version: the HRERS-Reablement Version (HRERS-RV). This adaptation was required due to differences in practices, or approach, between physical rehabilitation and reablement. To the authors' knowledge, this is only available measure of engagement with reablement.

The HRERS-RV was developed for the use in an evaluation of reablement services in England (*Reference removed for review*). One of the aims of the study was to identify and explore individual and service characteristics associated with intervention outcomes. Existing evidence from rehabilitation (Bright et al., 2015; Hochhalter, Song, Rush et al., 2010; Resnick, Beaupre, McGilton et al., 2016), and qualitative evidence from previous studies of reablement (Hjelle et al., 2017), indicated that it would be valuable and important to investigate the impact of engagement on outcomes. Thus we developed the HRERS-RV and included in the suite of measures used by the study, with the proviso that HRERS-RV data would only be used if psychometric tests deemed it acceptable.

The findings from our psychometric evaluation of the HRERS-RV are, overall, positive. It measures a uni-dimensional construct and has good predictive and discriminant validity in terms of discharge outcomes. Service user characteristics do not appear to significantly

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affect the way the scale performs meaning that it can be used across the entire population of reablement service users. Initial findings regarding test-re-test reliability are acceptable. However, a relatively small sample size means that further testing is recommended.

Two specific issues require discussion and, potentially, further attention. First, one item (concerning perceived impacts on cognitive or mood impairment on engagement) had a factor loading of less than 0.6. However, we felt it important to maintain the conceptual integrity of the HRERS in the revised version and therefore retained it. Interestingly, this item proved the most difficult item to adapt to the reablement context; further work on the wording of this item may address this issue.

Second, we note the observed ceiling effect and question whether revisions to the response format would address this. One option would be to change the number of response options (Moret, Nguyen, Pillet et al., 2007). Alternatively, the frame of reference could be changed from observed frequency of behaviours ('never' to 'always') to, for instance, how the target individual compares with the practitioner's wider experience using, for example, response options 'much less than usual' to 'more than usual'. This option would, however, represent a significant departure from the original scale. Finally, instructions about completion could further stress the importance of reflecting over the *entire* period of reablement.

Given the role played by the practitioner in securing or nurturing user engagement in an intervention (Bright et al., 2015; Higgins et al., 2017), an alternative explanation for the ceiling effect is that respondents (i.e. reablement staff) perceived the HRERS-RV as a measure of their own skills and this affected their responses. This lends weight to the

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argument for triangulating practitioner report with user-reported engagement (Bright et al., 2015).

Whilst scores on functional outcomes were used to test the predictive validity of the HRERS-RV, we note the wider implication of our findings. Specifically, they indicate that engagement with reablement may impact both short-term and long-term functional outcomes. This supports the argument for reablement services to attend to user engagement. Equally, in research, engagement is a potentially important variable to measure if we are to better understand factors impacting on intervention effectiveness.

Attending to the issue of engagement in the reablement context adds an interesting dimension to current understandings of this construct. In particular, it offers a new perspective to the relational dimension of engagement which stresses the continuity of relationship between patient and practitioner. However, reablement, at least in the UK, is typically delivered by multiple staff (*Reference removed for review*).

Findings from our wider evaluation (*Reference removed for review*) offer some early insights into this. Interestingly, practitioners generally regarded the involvement of multiple staff as a positive practice. Equally, service users did not typically express dissatisfaction with this. That is not to say, however, that the 'relational' aspect of the intervention was down-played. Rather, the involvement of multiple reablement practitioners was regarded as *increasing* the chances of that at least one practitioner would 'connect' with the service user. This suggests that, for some interventions, engagement may not be necessarily be compromised when multiple staff are involved. Alternatively, for some interventions,

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service user's commitment to intervention goals play a more dominant role in influencing levels of engagement compared to other interventions (Lequerica & Kortte, 2010; Lequerica, Rapport, Whitman et al., 2006). These issues certainly warrant further exploration.

Limitations

There are some constraints to the data presented and the strengths of conclusions which can be drawn. First, the HRERS-RV was only tested with service users from three reablement services. Second, the sample size is smaller than would be desired. Third, the lack of a user-reported measure of engagement limited our ability to test construct validity. Finally, the sample used to assess test-retest reliability was very small meaning that only preliminary evidence is reported.

CONCLUSIONS

To conclude, there is growing acknowledgement of the role engagement plays in outcomes of health and care interventions. It is therefore important to measure this construct in evaluations of reablement – an intervention approach which is attracting high levels of government investment in many countries (Aspinal et al., 2016; Legg, Gladman, Drummond et al., 2016; G. Lewin, De San Miguel, Knuiman et al., 2013; G. F. Lewin, Alfonso, & Alan, 2013). The HRERS-RV offers the opportunity to do this, though we do recommend further testing and, potentially, some revisions. In addition, the HRERS-RV will allow exploration of the way service organisation and delivery characteristics affect user engagement with reablement. This is particularly pertinent given the range of ways, at least in the UK, in which reablement services are currently organised and delivered (10).

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Table 1: Items and concepts of HRERS and HRERS-RV
Table 2: Characteristics of sample for which HRERS-RV was completed
Table 3: Factor loadings after orthogonal varimax rotation
Table 4: Functional status of baseline, discharge and 6 months follow-up, Numbers (N), means, standard deviations (SD), medians, minimum and maximum
Table 5: Predictive validity of the HRERS-RV score
Table 6: Predictive validity of the HRERS-RV binary measure

Box 1: The Hopkins Rehabilitation Engagement Rating Scale – Reablement Version (HRERS-RV)

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Table 1: Items and concepts of HRERS and HRERS-RV

HRERS item	Concept (Kortte et al., 2007)	HRERS-RV item
The patient regularly attended my therapy/rehabilitation activity.	Attendance	When I made my visits, the person was ready to start their reablement session.
The patient required verbal or physical prompts to actively participate in my therapy/ rehabilitation activity. (Reverse score)	Ability to participate / engage affected by cognitive impairments or low mood	The person's ability to take part in the reablement sessions/visits was affected by memory difficulties and/or low mood.
The patient expressed a positive attitude towards my therapy/rehabilitation activity.	Positive attitude	The person expressed a positive attitude towards the reablement activities we worked on together.
The patient acknowledged a need for rehabilitation services and the benefits of therapy exercises or rehabilitation activities.	Acknowledgement/ acceptance of need	The client accepted that they needed to be reabled.
The patient actively participated in his/her rehabilitation therapy/activity.	Active participation	The person actively participated in my reablement sessions/visits.

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Table 2: Characteristics of sample for which HRERS-RV was completed

		Number (percentage)		
		Baseline (n=186)	**Discharge (n=129)**	**6 months post-discharge (n=62)**
Characteristic				
Gender	Female	119 (69)	88 (68)	44 (69)
	Male	67 (36)	41 (32)	20 (31)
Living alone	No	79 (42)	51 (40)	27 (42)
	Yes	107 (58)	78 (60)	37 (58)
Referral reason	Return home	75 (40)	53 (41)	22 (34)
	Remain at home	111 (60)	76 (59)	42 (66)
Help from friends and family	No	20 (11)	13 (10)	7 (11)
	Yes	164 (89)	116 (90)	57 (89)
Illness requiring reablement	Musculoskeletal/Fall	111 (60)	78 (60)	43 (67)
	Respiratory problem	12 (6)	9 (7)	2 (3)
	Infection	20 (11)	16 (12)	4 (6)
	Other	43 (23)	26 (20)	15 (23)
Number of comorbidities	None	67 (36.)	46 (36)	28 (44)
	1	79 (42)	56 (43)	25 (39)
	2 or more	40 (22)	27 (21)	11 (17)

Age	**Time**	**N**	**mean**	**SD**	**median**	**min**	**max**
	Baseline	186	80.8	9.12	82	51	102
	Discharge	129	80.8	9.20	82	51	102

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6 months post-discharge	64	81.05	8.81	83	51	98

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Table 3: Factor loadings after orthogonal varimax rotation

Items	Factor 1	Factor 2
When I made my visits, the person was ready to start their reablement session.	0.84	0.04
The person's ability to take part in the reablement sessions/visits was affected by memory difficulties and/or low mood.	0.40	0.10
The person expressed a positive attitude towards the reablement activities we worked on together.	0.95	-0.02
The client accepted that they needed to be reabled.	0.82	-0.13
The person actively participated in my reablement sessions/visits.	0.92	0.14

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Table 4: Functional status at baseline, discharge and 6 months follow-up, Numbers (N), means, standard deviations (SD), medians, minimum and maximum

	Time	N	mean	SD	median	min	max
NEADL	Baseline	184	9.7	5.48	8.5	0	22
	Discharge	129	9.7	5.63	8	0	22
	6 months post-discharge	64	11.6	6.31	11	0	22
Barthel	Baseline	133	71.7	16.83	75	10	100
	Discharge	115	82.5	18.2	90	5	110

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Table 5: Predictive validity of the HRERS-RV score

Outcome measure	Coefficient (95% CI)	P-value	N
Short-term outcomes (Discharge)			
Barthel Index	1.592 (1.421 , 1.763)	<0.001	81
NEADL	0.147 (0.096, 0.199)	<0.001	108
Long-term outcomes (6 months post-discharge)			
NEADL	0.345 (0.001, 0.688)	0.049	41

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Table 6: Predictive validity of the HRERS-RV binary measure

Outcome measure	HRERS-RV binary predictor	Coefficient (95% CI)	P-value	N
Short-term outcomes (at discharge)				
Barthel Index	Moderate/low eng.	ref		57
	High engagement	11.948 (10.982, 12.914)	<0.001	69
NEADL	Moderate/low eng.	ref		46
	High engagement	1.374 (1.211, 1.538)	<0.001	63
Long-term outcomes (at 6-months post-discharge)				
NEADL	Moderate/low eng.	ref		19
	High engagement	1.968 (-1.215, 5.151)	0.226	25

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Box 1: The Hopkins Rehabilitation Engagement Rating Scale – Reablement Version (HRERS-RV)

Hopkins Rehabilitation Engagement Rating Scale – Reablement Version (HRERS-RV)

For each statement, please report your experience of working with this client over the entire course of your visits by ticking the relevant Figure (☑).

When I made my visits, the person was ready to start their reablement session.

❑ Never	❑ Rarely	❑ Some of the time	❑ Most of the time	❑ Nearly always	❑ Always

The person's ability to take part in the reablement sessions/visits was affected by memory difficulties and/or low mood.

❑ Never	❑ Rarely	❑ Some of the time	❑ Most of the time	❑ Nearly always	❑ Always

The person expressed a positive attitude towards the reablement activities we worked on together.

❑ Never	❑ Rarely	❑ Some of the time	❑ Most of the time	❑ Nearly always	❑ Always

The person accepted that they needed to be reabled.

❑ Never	❑ Rarely	❑ Some of the time	❑ Most of the time	❑ Nearly always	❑ Always

The person actively participated in my reablement sessions/visits.

❑ Never	❑ Rarely	❑ Some of the time	❑ Most of the time	❑ Nearly always	❑ Always