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**The Face Validity and Clinical Utility of the Activity Card Sort – United Kingdom**

**(ACS-UK)**

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**Abstract**

*Introduction:* The Activity Card Sort - United Kingdom version (ACS-UK) is a self-report interview assessment requiring older adults sort activity photograph cards to evaluate their levels of participation. The face validity and clinical utility of the ACS-UK were explored.

*Method:* The sample comprised 27 community dwelling older adults (>65 years) and eight assessors. The ACS-UK was administered, followed by a semi-structured interview to explore participants' opinions and experiences of undertaking the ACS-UK. Time taken to administer and score was measured.

*Results:* Mean administration and scoring time was 14 minutes and 30 seconds which was considered reasonable by older people and assessors. The majority of participants found the ACS-UK straight forward, easy to do and considered activities and activity labels clear. All participants considered that photographs looked like the activities they were depicting. Participants made recommendations which have led to some improvements to the ACS-UK.

*Conclusion:* The ACS-UK has good clinical utility in terms of ease of use and time required for administering and scoring the assessment. Face validity, in terms of acceptability, was good, but more detailed instructions in the manual will be required to guide therapists on how to explain the purpose of the ACS-UK to clients.

**Introduction**

Participation in meaningful activities can improve older people's health and well-being (Stav et al., 2012). It is important to encourage older adults to participate in occupations that promote, improve or maintain quality of life, health and well-being (National Institute for Clinical Excellence, 2008). Therapists should direct their practice using measurement tools that improve their understanding of 'the meaningful activities, tasks, and roles that support individuals striving to participate in their daily lives' (Baum and Cox, 2014: 43).The Activity Card Sort (ACS; Baum and Edwards, 2008) is a self-report outcome measure designed to identify changes in older adults' participation in instrumental, leisure and social activities. Each ACS test item comprises a photographed activity card with an activity description underneath. The ACS has greater utility when activities and photograph cards are culturally specific (Chan et al., 2006; Eriksson et al., 2011). A United Kingdom version of the ACS (ACS-UK) has been developed (Laver-Fawcett and Mallinson, 2013) and the face validity and clinical utility of this new version were explored in this study.

**Literature Review**

The ACS (2nd edition, Baum and Edwards, 2008) requires participants to sort activity cards into categories to indicate their level of engagement. It has three formats (institutional, recovering and community living versions) which use the same 89 photograph activity cards but involves sorting these into different participation categories. The institutional version (Form A) uses the categories: done before illness / injury or admission; not done before illness/ injury or admission. The recovery version (Form B) uses the categories: Not done before current illness or injury (activity is removed from scoring); continued to do during illness or injury (each activity is scored 1); doing less since illness or injury (each activity is scored 0.5); given up since illness or injury (each activity is scored 0); new activity since

illness and injury (each activity is scored 1). The community living version (Form C) uses the categories: not done in the last year (no score and activity is removed from scoring); do now (each activity scored 1); do less (each activity scored 0.5); and given up (each activity scored 0). This choice of versions enables the ACS to be applied across hospital (recovery version or institutional version dependent on the nature of the person's condition), community (recovery or community living versions) and long-term care settings (institutional version). Scores are calculated for current activity, previous activity and activities retained. For forms B and C, current activity is the sum of all activities that are done less or are still continued / done now. 'Done previously' is calculated from activities categorised as continued/ done now or done less and is scored 1 per activity, if either category has been selected, and then summed. Retained activity is calculated by dividing the current activity total by the done previously total and it is expressed as a percentage. At the end of the assessment, the person is asked to identify the five activities they consider most important as a guide for intervention, these can be activities that are no longer done (Baum and Edwards, 2001). The ACS can inform a client-centred intervention plan based on the participant's activity preferences and participation levels (Katz et al., 2003).

Reviews of ACS related research literature indicates that the ACS is a valid and reliable tool for measuring activity participation (Eriksson et al., 2011; Laver-Fawcett and Mallinson, 2013). To establish content validity, culturally sensitive ACS versions shared similarities in test development (Eriksson et al., 2011) and were based on the original ACS (Baum and Edwards, 2001, 2008). According to the 'Consensus-Based Standards for the selection of Health Measurement Instruments (COSMIN)' checklist manual (Mokkink et al., 2012: 30) 'the content of the instrument should match the target population' and this can be 'assessed by letting the target population judge this'. The ACS-UK content validity study (Laver-

Fawcett and Mallinson, 2013) comprised an activity participation survey with a sample of community-living UK older people (aged 65 years and older; n = 177). This was followed by semi-structured interviews and focus groups (n = 21) through which older people reworded some activity items, identified which activities could be combined with other activities and considered the classification of items into one of four activity domains: Instrumental Activities of Daily (IADL); Low Demand Leisure (LDL); High Demand Leisure (HDH); or Social / Cultural (SC) activities. This resulted in 91 activity items for inclusion in the ACS-UK. As older people contributed to the ACS-UK item selection, the ACS-UK activities and activity labels were anticipated to have good face validity.

The first author's previous experience of using the ACS (Baum and Edwards, 2008) with people dementia and carers found that they described 'doing more' of some activities and so this was considered as an ACS-UK sorting category. However, doing more of an activity can be perceived as a positive or negative change depending on the nature of the activity and the reasons for the increased participation level. As the ACS scoring method (Baum and Edwards, 2008) is used for the ACS-UK, the 'do more' category is scored the same as 'do now' to maintain equivalence with other ACS versions. The inclusion of 'do more' adds useful qualitative information for guiding intervention.  The ACS-UK uses the category 'Not done in the past year', in line with the Netherlands ACS-NL (Jong et al., 2012). If therapists wish to consider clients' activity engagement over their life time then the 'anchor' category of 'Not done in the past year' can be omitted. If the therapist is interested in more recent changes to activity levels the 'Not done in the past year' category can be a useful anchor. The category 'Never done' has been added to the ACS-UK this has no score and never done activities are removed from scoring.

A review of ACS literature indicated that there were no published studies related to the face validity of any ACS versions. Although, in the conclusion of an article by Doney and Packer (2008: 37), which examined three other types of validity of the Australian ACS (ACS-Aus), the authors noted that 'this study has added to existing face and content validity for the ACS-Aus, and has strengthened the evidence that it is a valid measure of current activity participation of healthy older Australians'. However, there was no mention of face validity in their methodology. An earlier article describing the development of the ACS-Aus (Packer et al., 2008: 205) stated that 'clinical utility' was 'established in other countries' but this assertion was not referenced. The ACS literature review found duration reported for four ACS versions. The ACS 2nd edition (Baum and Edwards, 2008: 7) has 89 items and 'on average, the ACS can be completed in about 20 minutes', but 'more time is required if the practitioner wishes to ask questions about the activities retained or lost and … what the client might like to do'. The Hong Kong ACS (ACS-HK; 65 items) takes on average 20 minutes to complete the ACS-HK Recovery version ; 'the duration of test administration was considered appropriate to sustain the attention and motivation of the subjects' (Chan et al, 2006: 156) . Katz et al. (2003: 12) reported the 88 item Israeli ACS 'lasted an average of 30 to 60 minutes'. In a study, to evaluate the validity and reliability of the 82 item Puerto Rican Spanish ACS version (PR-ACS), Orellano et al.(2012: 269) stated that the 'assessment sessions required 30 to 60 minutes'. However, it was not clear whether this time was just for the PR-ACS or also included the administration of a second measure used in their study. None of these authors stated explicitly whether the duration reported included the scoring time or just the administration time for cards to be sorted by clients. The divergence in administration times may relate to different sample populations in psychometric studies of different ACS versions. Given the variation in duration it was important to evaluate the time required for the administration and scoring of the ACS-UK.

*Aims*

This study examined the ACS-UK Community Living version (Form C) and aimed to examine the face validity and two aspects of clinical utility (duration and ease of use) of the ACS-UK from the perspective of community dwelling older adults and occupational therapy students considering their future practice. The specific objectives were to:

1. Determine the time required to administer and score the ACS-UK (clinical utility).

2. Explore the ease of use of the ACS-UK for the people administering the assessment - occupational therapy students considering their future practice (clinical utility).

3. Explore the acceptability of the ACS-UK to community dwelling older people (face validity and clinical utility).

4. Investigate the content validity of the ACS-UK from the perspective of community dwelling older people.

5. Measure the ACS-UK Global Activity Retention Scores among community dwelling older people.

Some measurement properties contain one or more aspects and the wider concept of content validity includes face validity (Mokkink et al, 2012). In the Consensus-based Standards for the selection of Health Measurement Instruments (COSMIN) checklist manual, *content validity* was defined as 'the degree to which the content of an … instrument is an adequate reflection of the construct to be measured'; and *face validity* as the 'degree to which (the items of) an … instrument indeed looks as though they are an adequate reflection of the construct to be measured' (Mokkink et al, 2012: 9). Face validity relates to whether a test subjectively seems to measure what it is intended to measure (Asher, 2007) from the perspective of: the person undertaking the test; the therapist administering the test; family members observing the test administration; and/or other professionals who use the test results

(Laver-Fawcett, 2012). *Clinical utility* is the 'overall usefulness of an assessment in a clinical situation' (Law, 1997: 431). Duration is one of the most frequently described aspects of clinical utility (McColl et al., 2000). The study also provided a sample of ACS-UK scores for community dwelling older adults to be used for future comparison with other samples.

**Method**

*Design*

This study used a mixed methods approach (Creswell and Plano Clark, 2011). A literature review found no specific guidelines to inform the methodology for a face validity study. The COSMIN checklist manual (Mokkink et al., 2012: 31) stated that no standards were developed for assessing face validity because 'face validity requires a subjective judgement'. A qualitative semi-structured interview data collection method was chosen to elicit the opinions of older people. An interview approach was effectively used by Barnett et al. (2015) when examining the face validity of a pictorial instrument with a sample of children. The ACS-UK produces quantitative data in the form of Current Activity (CA), Previous Activity (PA) and Retained Activity (RA) scores, expressed as percentages. The time taken to administer and score the ACS-UK was measured in seconds. This study was led by the first author and conducted over two years with two groups of four 3rd year occupational therapy students (n = 8 assessors).

*Sample*

Convenience sampling was used to recruit participants. As the study was just focused on the ACS-UK Community Living Version (Form C), participants were recruited through local community centres, religious groups, coffee mornings, libraries and contacts known to the

researchers. Recruitment posters, leaflets and sign-up sheets were distributed. The inclusion criteria were:

- community dwelling older adults (not living in a residential or nursing home);

- over the age of 65;

- who could comprehend and communicate in English (the project did not have the resources for translation and the ACS-UK activity labels on cards are written in English);

- had capacity to provide informed consent (according to Mental Capacity Act 2005).

Exclusion criteria included people who were currently receiving secondary NHS care or social services. Participants could be receiving check-ups/ routine care from their GPs (e.g. seasonal flu jabs). Participants selected their preferred choice of venue for data collection from a choice of: the University where the researchers were working / studying; a community venue (e.g. church hall, community centre, local library); or the participant's home. A target sample size of 30 people was selected. The COSMIN checklist (Terwee et al., 2012) stated that sample sizes below 30 for psychometric studies are poor. However, it should be noted that sample sizes for qualitative studies using interview data collection methods tend to be smaller than those for quantitative psychometric studies (Dickerson, 2006).

*Data collection*

*Demographic data:* Data related to gender and ethnicity was collected the first year the study was undertaken (first sample). The second time the study was undertaken participants (second sample) completed a demographics form which included: age; gender; marital status; highest level of education; and ethnicity (using categories from the Office of National Statistics 2011 Census). This data was collected to enable comparison to samples from other ACS studies and planned future  studies.

*Administration and scoring of the ACS-UK:* Participants sorted the 91 activity cards into the categories: Never done; Do More; Do Now; Do Less; Given up. The ACS (2nd edition manual; Baum and Edwards, 2008) administration instructions for the community living version were followed for this study, these state: 'Ask the client to look at each of the activity cards, one at a time, and place the card under the label that applies to his or her situation. The verbal instruction is*: "*Place the cards in the category that best describes your involvement with the activity." (p. 9). Participants were allowed to discuss the activities as they undertook the sort if they wished. At the end of sorting participants identified five most important activities. The ACS-UK is scored: never done: not scored; do now (or do more) = 1; do less= 0.5; and given up= 0 (Baum and Edwards, 2008). 'Done previously' is calculated after sorting (any activities in the 'do more', 'do now', 'do less' or 'given up' category are recorded in the 'done previously' column). Scores are calculated for each of the four activity domains (IADL; LDL; HDL; SC). Previous Activity (PA) is the sum of activities 'done previously'. Current activity (CA) is the sum of activity items sorted as 'do now / do more' added to the sum of activity items sorted as 'do less'. To calculate the retained activity score (RAS), CA is divided by PA and is then multiplied by 100 to produce a percentage score. Scores for all four activity domains are totalled to produce the Global Current Activity (GCA) score, Global Previous Activity (GPA) score and Global Retained Activity Score (GRAS). See Appendix 2 for an example ACS-UK Form C record form showing scoring.

*Clinical utility:* Time taken to calculate the CA, PA and RAS scores after the ACS-UK sort had been completed was measured (objective 1). The second group of researchers also measured the time taken to administer the card sort. Assessors' views related to ease of use and scoring were collected through individual written reflections (objective 2).

*Interview:* Participants completed the ACS-UK (scores obtained contributed to objective 5) prior to being interviewed to gain their opinions and experience of the assessment (objectives 3 and 4).  A semi-structured interview was developed to explore aspects of face validity, content validity and clinical utility (see Appendix 1). Open ended questions were used to allow participants to state opinions and explore ideas further. Some bias is inevitable when using more than one researcher in qualitative data collection (Creswell and Plano Clark, 2011), so researchers carried out interviews in pairs to ensure consistency. Interviews were audio recorded and transcribed verbatim.

*Data Analysis*

Data collection was undertaken over two academic years and analysed separately (first sample, second sample) and then as a combined sample. Range, means (M) and standard deviations (sd) were calculated for administration and scoring times. Range, mean and standard deviation were calculated for the ACS-UK GRAS and four domain RAS scores. Interview data for the two samples was combined. Responses for each interview question were analysed and summarised separately. To increase trustworthiness the analysis was undertaken individually by four occupational therapy students, then compared and discussed as a group and verified by the first author.

*Ethics*

Ethical approval was granted by the Research Ethics Committee at York St John University. Participants were given a written information sheet outlining the study purpose, procedures, right to withdraw, planned storage, use and disposal of data, and proposed dissemination of results. Participants were told that the project was 'aimed at

developing a United Kingdom version of an occupational therapy assessment called the

Activity Card Sort (ACS-UK)' and that this 'assessment involves sorting 91 cards with

photographs of everyday activities into piles, depending on how often you do or do not

do the activity; for example: activities I do now; activities I used to do; activities I have

never done.' Participants were asked to take part in an interview about their 'experience

of doing the ACS-UK assessment and what you thought about it'. To ensure

confidentiality and anonymity each participant was given a subject code. Written

consent was obtained. When direct quotes from participants are provided below they

have been identified in brackets, for example Participant 1 denoted as (P1).

**Results**

*Participants*

Participants were recruited from two cities in the North of England. The *first sample*

comprised 16 participants (9 women; 7 men). The *second sample* comprised 11 participants

(7 women; 4 men) aged between 65-87 years (mean 76, sd ± 7.43). Despite attempts to

recruit participants from different ethnicities, all participants indicated that they were White.

Seven were married, three were widowed and one was divorced. For the highest level of

qualification, six participants reported no qualifications, one had O levels, one had A levels

and three had undertaken vocational training. The *combined sample* comprised 27

participants (16 women; 11 men) aged 65 or over.

*Duration (objective 1)*

The time taken to score the ACS-UK was calculated for the first sample (n = 16). For the

second sample (n = 11) researchers recorded both administration and scoring time (see Table

1). Table 1 indicates that the mean scoring time for samples 1, 2 and the combined sample were similar and the standard deviations were very close. Time taken to administer ranged from 4 minutes 50 seconds to 17 minutes. The difference in time was influenced by the way the participant chose to carry out the ACS-UK; some participants completed the sort without any communication or hesitation, whereas others talked about the reasons for selected categories. When the mean time for administering and for scoring the ACS-UK was combined, the average duration was 14 minutes 31 seconds.

[Table 1 near here]

**Table 1: Summary of data for time taken to administer and score the ACS-UK**

*ACS-UK scores (objective 5)*

The range, mean and SD for the four domain RAS for the combined sample (N =27) are provided in Table 2 along with the GRAS results. No participants used the blank cards to add additional activities.

[Table 2 near here]

**Table 2: Summary of ACS-UK Retained Activity Scores**

*Participants' Views of the ACS-UK (question 1; objectives 3 and 4)*

When asked about their first impressions the majority of participants felt positively about the ACS-UK. Ten participants reported the ACS-UK was '*good*' or '*very good*'. Another six made comments related to finding it '*interesting*' and / or '*straightforward*'. Other comments included it being '*well organised*' (P23), '*widespread*' (P12) and '*very detailed*' (P8). One person considered it to be '*amusing*' and '*enlightening*' (P1). Three participants, however, stated that they had some difficulty understanding the assessment with one participant finding

it *'confusing'* (P2). One participant stated the assessment was *'fine'* but that it *'did not cover every eventuality'* (P11).

*Completing the ACS-UK (questions 2 and 3; objective 3)*

Although 85% (n = 23) stated the ACS-UK was easy and straightforward to do, four participants reported that they had been unsure where certain cards should be placed. Two participants had difficulty in sorting ACS-UK item 80 'being with your spouse or partner' and it transpired that these participants were widowed. One participant felt that placing this item in the 'given up' category was not appropriate as this change was not from choice. All participants agreed the ACS-UK instructions were easy to follow. Nine participants reported that the sorting category labels made sense with one stating *'there couldn't be any more alternatives'* (P25). Three participants mentioned that they had difficulty deciding which five activities to choose as their most important.

*Purpose of the Assessment (question 4; objective 3)*

When asked about the purpose of the ACS-UK, 37% (n = 10) thought the assessment was related to age. Example comments: '*to see if old age is setting in'* (P22); *'to test the level of intelligence for the age group'* (P24); and *'accounting for people's age and what their mind is like'* (P15). Forty-eight percent (n = 13) thought the assessment was to *'see what people over 65 do with their lives'* (P23). One person considered the assessment was *'to develop some sort of a system to help people come back into normal life'* (P20). Two people appeared unsure of the purpose of the assessment and two people noted that the purpose of the assessment was to help with student studies. One participant indicated the benefits of the assessment were not clear, but then added that the assessment was a useful tool for someone with illness or injury.

*Views of the Activity Items (questions 5, 6 and 7; objective 4)*

All participants reported that the photographs looked like the activities they were depicting. However, two participants mentioned the age range of people in the photographs noting that they *'showed people a lot older than 65'* (P19). Ninety-six percent (n = 26, missing data n = 1) agreed the activity labels matched the photographs on the cards. One person (P7) commented that he/she tended to look more at the activity description and paid less attention to the photograph. Eighty-one percent (n = 22) stated that no activities that older people engage in had been missed. One participant said some specific activities had not been included but could be *'classed under volunteer work'* (P11). The remaining five participants felt *'volunteering with people'* (P18); *'sleeping'* (P7); *'football'* (P14); *'jigsaws'* (P14, P26); and *'playing an instrument'* (P16) were not covered by the ACS-UK items.

*Time taken (question 8; objective 3)*

Twenty-five participants (92.6%; missing data n = 1) agreed the time to complete the assessment was reasonable. Comments included: *'very quick'* (P24); *'just right'* (P21); *'didn't take long'* (P3); and *'shorter than I thought it would be'* (P19). The remaining participant discussed the ease of the assessment but did not comment specifically on the time taken.

*Suggestions to improve the assessment (questions 9, 10 and 11; objectives 3 and 4)*

Eighty-nine percent (n = 24; missing data n = 1) did not identify anything they did not like about the assessment. Seventy percent (n = 19) reported that they could not think of any way to make the assessment better. One person (P16) was unsure of the purpose of the assessment and so felt unable to answer this question. Three participants suggested further sorting

categories were needed and suggestions were: *'wish I could do'* (P18); *'aims for the future'* (P18); *'not applicable'* (P3); *'not often'* (P7); and *'sometimes'* (P7). Another person felt the pictures did not represent 65 year olds and said some photographs did not present people physically doing the activities.

*Assessors views of undertaking the assessment (objective 2):* All eight occupational therapy students reported the ACS-UK was easy to administer and straightforward to score. There were problems identified with item 80 'Being with your spouse / partner' as two participants had been emotional when speaking of the death of a loved one. Students also noted that some participants asked questions in order to clarify what was involved in the activity. In particular, item 14 'Managing financial matters' was suggested as an item that could benefit from some more written examples on the card, such as paying a bill and banking.

**Discussion and implications**

**ACS-UK scores**

The ACS-UK scores from this study (n = 27; Table 3) were compared to data reported for similar samples for other ACS versions. For example, Katz et al. (2003) reported I-ACS retained activity scores for a sample (n = 61) of healthy older adults, according to gender. Baum and Edwards (2008) reported ACS scores from 57 older people (mean age 74 years). For the ACS-UK, ACS and Israeli samples, the highest levels of retained activity were for instrumental activities of daily living, although the mean IADL RAS for the UK sample was slightly lower than the Israeli sample (ACS-UK mean of 79% (sd 8) compared to I-ACS mean RAS of 89% (sd 9) for men and 83% (sd 15) for women), and higher than the ACS sample (mean 68%, sd 26). For all three samples the lowest participation levels were for high demand leisure (HDL) activities; the ACS-UK sample had mean 57% (sd 20), which was

very similar to that reported by Katz et al (2003) for older men (56% mean, sd 21) and slightly higher than the ACS sample (Baum and Edwards, 2008) of 54% (sd 2). Global participation levels were also similar; the ACS-UK GRAS mean of 70% (s.d.10) falls between the I-ACS GRAS means for men (M = 74, sd 11) and women (M = 68, sd 13) and was slightly higher than that of the ACS sample (mean 67, sd 21).

**Clinical utility**

*Duration*

The average time for administering and scoring the ACS-UK was around fourteen and a half minutes which compares favourably with the duration reported for other ACS versions (see Literature review). The longest scoring time was just under 7 minutes and the longest administration time was 17 minutes, giving a total assessment time of around 24 minutes. So even at the outer range, the total assessment time was only four minutes longer than the 20 minutes reported for the ACS-HK (Chan et al., 2006) and ACS (Baum and Edwards, 2008) and less time consuming than the Israeli ACS, which Katz et al. (2003) reported took between 30-60 minutes. However, Katz et al. undertook a discriminant validity study with healthy adults and older adults, caregivers and people with Alzheimer's, stroke, or multiple sclerosis. So it may be that test administration will take longer with some client groups.

[Insert Table 3 near here]

**Table 3: Summary of participant feedback and decisions made to improve the ACS-UK**

*Ease of Use*

Table 3 summarises the areas for improvement identified from participant interviews, the considerations made by researchers and the resultant changes made to improve the ACS-UK.

Participants were able to sort activity items into the engagement categories and the majority (n = 23) found the assessment easy and straightforward to do and the instructions easy to follow. Therapists are now advised to remove 'Being with your spouse / partner' if clients are widowed. As ACS-UK has 91 activity cards it may have been overwhelming for participants to decide which five activities were most important, so overview sheets showing all the ACS-UK activities have been produced.

**Face validity**

Face validity in terms of the relevance of activities and the activity labels appears good. The majority agreed the photographs looked like the activities they were representing and descriptions given were clear. For activity labels that cover a number of activities, such as 'Managing financial matters', some examples in brackets for some of the combined activity items have been added (see Table 3). As the assessment is for people aged 65 and over it is important that the photographs included are representative of the whole age group. Several items have now been re-photographed to show people under 70 completing activities. Face validity, in terms of the purpose of the assessment being clear, was only fair because several participants were unsure of the purpose or had not correctly identified the reason for the assessment. This may have been because a more direct face validity question would have been beneficial, for example *"Does this assessment accurately identify the things you do and things you no longer do?",* in addition to question 4 *"What do you think the purpose of this assessment is?"* (see Appendix 1). More detailed guidelines have been provided in the ACS-UK test manual to instruct therapists how to explain the purpose of the ACS to clients or research participants.

**Content validity**

Five participants suggested activities missed from the assessment. One participant suggested

adding an item for sleeping (P7). The ACS-UK item 15 'Taking a rest' shows someone

sitting on a sofa with her eyes closed and researchers considered whether  sleeping could be

encompassed within this activity. However, a literature review identified that sleep and rest

are separate activities and are critical because 'restorative rest and sleep … supports healthy

active engagement in other areas of occupation' (American Occupational Therapy

Association, 2008: 632). Sleep problems are prevalent amongst older people and

occupational therapists can offer interventions to address the 'context and environment,

performance patterns, and limited engagement in evening activities that may contribute to

poor sleep' (Leland, et al., 2014, p. 141). Therefore, a new item 'Sleeping' has been included

in the ACS-UK.

One participant suggested that an item to represent volunteering with people needed to be

added and recommended a card that was demonstrative of an active role of volunteering such

as working with children or adults. ACS-UK item 78 'Volunteer Work' can include a wider

range of volunteering activities and further examples in brackets have been added (see Table

4). Two participants highlighted that jigsaws were not included. During the content validity

study 'Putting together puzzles' received a mean frequency above the cut-off during Round 1,

but during Round 2 it was collapsed into a combined item 'Doing Puzzles / Crosswords'

(item 32; Laver-Fawcett and Mallinson, 2013). Participants felt jigsaws were different to

word puzzles, therefore, an additional activity 'Doing Jigsaws' has now been photographed

and added. One participant identified football was not included in the list of activitiesbut did

not clarify whether this meant playing or watching football. Watching football is covered by

item 30 'Going to watch a sports event' but playing football would only come under item 62

'Exercising'; examples were added to this item (see Table 4). The other suggested activity was 'playing an instrument' this activity had been considered during the development of the ACS-UK (Laver-Fawcett and Mallinson, 2013) but had not met the cut-off level for inclusion. It is not possible to include every possible activity within the ACS-UK so the scoring form (see Appendix 2) contains space for up to five additional activities which can be written onto the form and sorted using the same categories and it is planned to include five blank activity cards which therapists can write on with removable ink and the person can then add to his / her sort. Several activities have been re-photographed to show people participating in the activity. For example, item 56 'Swimming' previously showed a photograph or an empty swimming pool and now shows a lady swimming.

*Limitations and future research*

This study involved a small convenience sample older adults and the sample appeared homogeneous in terms of ethnicity. It would be beneficial to conduct a further study with a more ethnically diverse sample that better represents the UK older adult population. It should be noted that the participant sampling strategy may have led to a biased sample because people who attend community centres, religious groups, coffee mornings and libraries might be more engaged in some activities than people who do not, particularly activities within the social / cultural domain, and may have had different views. As a number of changes are being made to the ACS-UK in response to the results of this study, it would be useful to evaluate whether the changes lead to improved face validity with another sample. Katz et al (2003) examined the differences in activity participation between men and women and a secondary analysis examining Retained Activity Scores and Global Retained Activity Scores by gender of the ACS-UK scores obtained by this sample would be useful.

**Conclusion**

Overall the ACS-UK has good acceptability and utility in terms of older adult's first impressions, ease of understanding instructions, activities, activity labels and carrying out the card sort. However, understanding of the purpose of the ACS-UK was varied and this aspect of face validity can only be considered as fair. More detailed guidelines have been provided in the ACS-UK test manual to instruct therapists how to explain the purpose of the ACS. The reasonable time required to administer and score the ACS-UK, along with the ease of administering and scoring the assessment suggests it has good clinical utility. Additional activities were identified and 'Doing Jigsaws' and 'Sleeping' have been added. Additional descriptions have been added to some activities to increase understanding. A sample of ACS-UK scores for community dwelling older adults was obtained for a future discriminative validity study.

**Key Messages**

**Key findings**

The ACS-UK is a clinically useful assessment that has reasonable face validity with older adults. ACS-UK scores for a UK sample were similar to I-ACS scores for Israeli older adults.

**What the study has added**

The face validity and clinical utility of the ACS-UK was evaluated by exploring older people's experiences and perceptions of the assessment and resulted in changes to improve its acceptability.

**Declarations of conflicting interest:** The first author maintains copyright of the Activity Card Sort-United Kingdom (ACS-UK). The ACS-UK manual and cards may be published for profit in future.

**References**

American Occupational Therapy Association (AOTA; 2008) *Occupational Therapy Practice Framework: Domain and Process (2$^{nd}$ ed.)* Bethesda: American Occupational Therapy Association.

Asher IE (2007) *Occupational Therapy Assessment Tools: An annotated index*. 3$^{rd}$ ed. Bethesda: American Occupational Therapy Association.

Barnett LM, Ridgers ND, Zask A, and Salmon J (2015) Face validity and reliability of a pictorial instrument for assessing fundamental movement skill perceived competence in young children. *Journal of Science and Medicine in Sport*, 18(1): 98–102.

Baum CM and Cox DL (2014) Special Issue: Occupational performance measures for health and wellbeing — research and practice. *British Journal of Occupational Therapy*, 77(2): 43.

Baum CM and Edwards DF (2001) *Activity Card Sort (ACS): Test manual*. St Louis MO: Penultima Press.

Baum CM and Edwards DF (2008) *Activity Card Sort (ACS): Test manual.* 2nd ed. Bethesda: AOTA Press

Chan WK, Chung J and Packer TL (2006) Validity and reliability of the Activity Card Sort – Hong Kong version. *OTJR: Occupation, Participation, and Health,* 26:152–158.

Creswell JW and Plano Clark VL (2011) *Designing and Conducting Mixed Methods Research.* 2<sup>nd</sup> ed. Thousand Oaks: Sage Publications.

Dickerson AE (2006) Securing Samples for Effective Research Across Research Designs. In: Kielhofner G (ed) *Research in Occupational Therapy Methods of Inquiry for Enhancing Practice.* Philadelphia: FA Davies

Doney RM and Packer TL (2008) Measuring changes in activity participation of older Australians: Validation of the Activity Card Sort – Australia. *Australasian Journal on Ageing,* 27(1): 33–37.

Eriksson G, Chung J, Beng L, Hartman-Maeir A, Yoo E, Orellano E, Van Nes F, DeJonge D and Baum C (2011) Occupations of older adults: A cross cultural description. *OTJR: Occupation, Participation and Health*, 31(4): 182-92.

Jong AM, van Nes FA and Lindeboom R (2012) The Dutch Activity Card Sort institutional version was reproducible, but biased against women. *Disability and Rehabilitation,* 34(18):1550-1555.

Katz N, Karpin H, Lak A, Furman T and Hartman-Maeir A (2003) Participation in occupational performance: reliability and validity of the Activity Card Sort. *OTJR: Occupation, Participation and Health* 23(1): 10 -17.

Laver-Fawcett A J (2012) Assessment, Evaluation and Outcome Measurement. In: E Cara and A MacRae, eds. *Psychosocial Occupational Therapy: An Evolving Practice.* 3rd ed. Hingham Massachusetts: Cengage Learning - Delmar Publishers.

Laver-Fawcett AJ and Mallinson SH (2013) Development of the Activity Card Sort - United Kingdom version (ACS-UK). *OTJR: Occupation, Participation and Health,* 33(3): 134-145**.**

Law M (1997) Self Care. In: J Van Deusen and D Brunt, eds. *Assessment in Occupational Therapy and Physical Therapy*. London: WB Saunders.

Leland NE, Marcione N, Schepens Niemiec SL, Fogelberg KKD (2014) What is occupational therapy's role in addressing sleep problems among older adults? *Occupational Therapy Journal of Research*, 34(3): 141–149.

*Mental Capacity Act* (2005) London: HMSO.

McColl M, Paterson M, Davies D, Doubt L and Law M (2000) Validity and community utility of the Canadian Occupational Performance Measure. *Canadian Journal of Occupational Therapy, 67*: 22–30.

Mokkink LB, Terwee CB, Patrick DL, Alonso J, Stratford PW, Knol DL, Bouter LM and de Vet HCW (2012) *COSMIN checklist manual*. Available at: http://www.cosmin.nl/images/upload/files/COSMIN%20checklist%20manual%20v9.pdf (accessed 14 April 2015).

National Institute for Health and Clinical Excellence (2008) *Mental Wellbeing and Older People.* London: The Stationary Office.

Office for National Statistics (2011) *2011 Census Analysis: Ethnicity and Religion of the Non-UK Born Population in England and Wales.* Available at: http://www.ons.gov.uk/ons/rel/census/2011-census-analysis/ethnicity-and-religion-of-non-uk-born-population-in-england-and-wales--2011-census/rpt.html#tab-Ethnicity-of-the-non-UK-born-population- (accessed 22 September 2015).

Orellano EM, Ito M, Dorne R, Irizarry D and Davila R (2012) Occupational participation of older adults: reliability and validity of the activity card sort – Puerto Rican version. *OTJR, Occupation, Participation and Health*, 32(1): 266 – 272.

Packer TL, Boshoff K and DeJonge D (2008). Development of the Activity Card Sort – Australia. *Australian Occupational Therapy Journal,* 55: 199–206.

Stav WB, Hallenen T, Lane J and Arbesman M (2012) Systematic review of occupational engagement and health outcomes among community-dwelling older adults. *American Journal of Occupational Therapy*, 66(3): 301-310.

Terwee CB, Mokkink LB, Knol DL, Ostelo RW, Bouter LM, and de Vet HC (2012) Rating the methodological quality in systematic reviews of studies on measurement properties: A scoring system for the COSMIN checklist. *Quality of Life Research*, *21*(4): 651–657.

**Appendix 1. Interview Questions**

*"Thank you for completing the assessment. We are going to ask you a few questions on how you found the assessment. Are you still happy to take part in the interview?"*

1. What are your first impressions of the Activity Card Sort? (objective 3)

2. Did you find the assessment straightforward to carry out? (objective 3)

3. How easy were the instructions to follow, in relation to: (objective 3)

    - Categories make sense

    - Sorting the cards

    - Choosing 5 most important / favourite activities

4. What do you think the purpose of this assessment is? (objective 3)

5. Do the photographs look like the activities they are representing? (objective 4)

6. Do the descriptions match the pictures on the cards? (objective 4)

7. Have we missed any activities that you know older people participate in? (objective 4)

8. What do you think about the time it took to complete the assessment? (objective 3)

9. Was there anything you didn't like about the assessment? (objective 3)

10. Is there any way we can improve the assessment? (objectives 3 and 4)

11. Do you have any additional comments you would like to make? (objectives 3 and 4)

*Thank you, we are very grateful to you for participating in this study*

# Appendix 2: Example ACS-UK Form C scoring form

| ACS-UK Card Number | ACS-UK Activity | Never Done | Not done in the past year / Not sorted | Do More | Do Now | Do Less | Given Up | | Done Previously | Scores | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Instrumental** | | | | | | | | | | |
| 1 | Food / Grocery Shopping | | | | 1 | | | | 1 | | Rarely goes to supermarket goes to corner shop |
| 2 | Shopping for Clothes / Shoes | | | | | 0.5 | | | 1 | | |
| 3 | Washing Up | | | | 1 | | | | 1 | | |
| 4 | Doing the Laundry | | | | 1 | | | | 1 | | |
| 5 | Gardening / Tending your Allotment | | | | | | 0 | | 1 | | Son does the garden for her |
| 6 | Putting the Rubbish / Recycling Out | | | | | 0.5 | | | 1 | | Son helps when he visits |
| 7 | Cooking a Meal | | | | 1 | | | | 1 | | |
| 8 | Household Chores | | | | | 0.5 | | | 1 | | Daughter helps with vacuuming |
| 9 | Performing DIY | | | | | | 0 | | 1 | | Her son helps with DIY now she is widowed |
| 10 | Driving | | | | | 0.5 | | | 1 | | Reports she is losing confidence driving |
| 11 | Vehicle Maintenance | X | | | | | | | | | Her son does the vehicle maintenance for her |
| 12 | Going to the Doctor / Dentist | | | X | 1 | | | | 1 | | |
| 13 | Taking Care of Pets | | | | 1 | | | | 1 | | Has a cat |
| 14 | Managing Financial Matters | | | | | 0.5 | | | 1 | | Children help with paying cheques at bank |
| 15 | Taking a Rest | | | X | 1 | | | | 1 | | Fatigues more easily so rests during the day |
| 16 | Going to the Hairdresser / Barber | | | | | 0.5 | | | 1 | | |
| 17 | Mending / Repairing Clothes | | | | | | 0 | | 1 | | Has difficulty manipulating the needle. |
| 18 | Childcare / Babysitting | | | | | 0.5 | | | 1 | | |
| 19 | Working in Paid Employment | | | | | | 0 | | 1 | | Retired 16 years ago |
| 20 | Preparing a Hot Drink | | | | 1 | | | | 1 | | |
| 21 | Conducting Personal Care | | | | 1 | | | | 1 | | |
| 22 | Using Public Transport | | | | | 0.5 | 0 | | 1 | | |
| 23 | Conducting Personal Business | | | | | 0.5 | | | 1 | | |
| 24 | Taking Care of Others | | | | | 0.5 | | | 1 | | |
| 25 | Making your Bed | | | | 1 | | | | 1 | | But says it is 'a struggle' some days |
| 26 | Talking on the Telephone | | | X | 1 | | | | 1 | | |
| 27 | Keeping a Diary / Calendar of Events | | | | 1 | | | | 1 | | |
| | **Total Instrumental Activities** | **1** | - | 3 | 12 | 5 | 4 x 0 | | 26 | Current | 12 + 5 = 17 |
| | | | | | | | | | | Previous | 26 |
| | | | | | | | | | | % Retained | 17/26 = 0.65 x100 = 65.4% retained |

| ACS-UK Card Number | ACS-UK Activity | Never Done | Not done in the past year / Not sorted | Do More | Do Now | Do Less | Given Up | | Done Previously | Scores | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Low Demand Leisure** | | | | | | | | | | |
| 28 | Knitting / Needlecrafts | | | | | | 0 | | 1 | | Because of stiffness in fingers |
| 29 | Playing Table Games | | | | | 0.5 | | | 1 | | With grandchildren, e.g. scrabble |
| 30 | Going to Watch a Sports Event | X | | | | | | | | | |
| 31 | Cooking / Baking as a Hobby | | | | | 0.5 | | | 1 | | Likes to bake with grandchildren |
| 32 | Doing Puzzles / Crosswords | | | | | 0.5 | | | 1 | | |
| 33 | Using a Computer | X | | | | | | | | | |
| 34 | Taking Photographs | | | | | 0.5 | | | 1 | | |
| 35 | Reading a Religious Book | | | | 1 | | | | 1 | | |
| 36 | Written Communications | | | | 1 | | | | 1 | | Likes to write letters to friends |
| 37 | Reading a Magazine | | | X | 1 | | | | 1 | | |
| 38 | Looking at Photo Albums / Home Videos | | | | 1 | | | | 1 | | |
| 39 | Researching Family / Local History | X | | | | | | | | | But would like to write down what she remembers for her family |
| 40 | Watching Films on DVD / Video | | | | 1 | | | | 1 | | |
| 41 | Reading a Newspaper | | | X | 1 | | | | 1 | | |
| 42 | Watching Nature | | | | 1 | | | | 1 | | |
| 43 | Gambling | X | | | | | | | | | |
| 44 | Playing Bingo | | | | | | 0 | | 1 | | Friend she used to go with passed away |
| 45 | Going to the Cinema | | | | | 0.5 | | | 1 | | |
| 46 | Watching Television | | | X | 1 | | | | 1 | | |
| 47 | Listening to the Radio / Music | | | X | 1 | | | | 1 | | |
| 48 | Sitting and Thinking | | | X | 1 | | | | 1 | | |
| 49 | Relaxing / Meditating | | | X | 1 | | | | 1 | | |
| 50 | Entering Competitions | | | | | 0.5 | | | 1 | | |
| 51 | Reading a Book | | | | 1 | | | | 1 | | |
| 52 | Flower Arranging | | | | | | 0 | | 1 | | Used to be on flower arranging rota at church |
| | **Total Low Demand Activities** | **4** | **-** | **6** | **12** | **3** | **3 x 0** | | **21** | Current | 12 +3 = 15 |
| | | | | | | | | | | Previous | 21 |
| | | | | | | | | | | % Retained | 15/21 = 0.714 x 100 = 71.4%  retained |

| ACS-UK card Number | ACS-UK Activity | Never Done | Not done in past year / Not sorted | Do More | Do Now | Do Less | Given Up | | Done Previously | Scores | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **High Demand Leisure** | | | | | | | | | | |
| 53 | Going to the Beach | | | | | 0.5 | | | 1 | | |
| 54 | Recreational Shopping | | | | | 0.5 | | | 1 | | |
| 55 | Dancing | | | | | | 0 | | 1 | | Used to go to tea dances with her husband |
| 56 | Swimming | | | | | | 0 | | 1 | | |
| 57 | Indoor Bowling | X | | | | | | | | | |
| 58 | Outdoor Bowling | X | | | | | | | | | |
| 59 | Playing Golf | X | | | | | | | | | |
| 60 | Walking | | | | | 0.5 | | | 1 | | |
| 61 | Hiking / Rambling | X | | | | | | | | | |
| 62 | Exercising | | | | | 0.5 | | | 1 | | |
| 63 | Riding a Bicycle | | | | | | 0 | | 1 | | |
| 64 | Going on Holiday / Travelling | | | | | 0.5 | | | 1 | | |
| 65 | Attending a Hobby / Leisure Group | | | X | 1 | | | | 1 | | Joined a local Tach chi class |
| 66 | Going to Gardens / Parks | | | | | 0.5 | | | 1 | | Would like to go more |
| 67 | Fishing | X | | | | | | | | | Used to go with father as a child |
| | **Total High Demand Leisure Activities** | **5** | | 1 | 1 | 3 | 3 | | 10 | Current | 1 + 3 = 4 |
| | | | | | | | | | | Previous | 10 |
| | | | | | | | | | | % Retained | |
| | | | | | | | | | | | 4/10 = 0.4 x100 = 40% retained |

| ACS-UK Card Number | ACS-UK Activity | Never Done | Not done in the past year / Not sorted | Do More | Do Now | Do Less | Given Up | | Done Previously | Scores | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Social/Cultural** | | | | | | | | | | |
| 68 | Visiting Graves | | | X | 1 | | | | 1 | | Husband passed away last year |
| 69 | Having a Picnic / BBQ | | | | | 0.5 | | | 1 | | Occasionally with family |
| 70 | Spending Time with Family / Friends | | | | 1 | | | | 1 | | |
| 71 | Visiting Family / Friends who are Ill | | | | 1 | | | | 1 | | |
| 72 | Eating Out | | | | | 0.5 | | | 1 | | |
| 73 | Going to Parties | | | | | 0.5 | | | 1 | | |
| 74 | Going on Outings | | | X | 1 | | | | 1 | | With social club – really enjoys this |
| 75 | Going for Drinks at Pubs / Social Clubs | | | | | 0.5 | | | 1 | | |
| 76 | Going to Places of Worship | | | | 1 | | | | 1 | | Attends church regularly |
| 77 | Doing Activities with Grandchildren / Children | | | | 1 | | | | 1 | | |
| 78 | Volunteer Work | | | | | | 0 | | 1 | | In charity shop until 2 years ago |
| 79 | Voting | | | | 1 | | | | 1 | | |
| 80 | Being with your Spouse / Partner | | | | | | 0 | | 1 | | Widower for 14 months |
| 81 | Cultural Visits | | | | 1 | | | | 1 | | National Trust with family |
| 82 | Going to Music / Performing Arts Events | | | | | 0.5 | | | 1 | | |
| 83 | Studying for Personal Advancement | X | | | | | | | | | Left school at 16 years |
| 84 | Attending a Night Class / Adult Education Class | X | | | | | | | | | |
| 85 | Attending a Social / Community Group | | | X | 1 | | | | 1 | | Age UK weekly social club |
| 86 | Having a Tea / Coffee with Someone Else | | | | | 0.5 | | | 1 | | |
| 87 | Going to a Public Library | | | | | 0.5 | | | 1 | | |
| 88 | Being on a Committee | X | | | | | | | | | |
| 89 | Dating / Companion Seeking | X | | | | | | | | | |
| 90 | Entertaining at Home | | | | | 0.5 | | | 1 | | |
| 91 | Attending Celebrations / Ceremonies | | | | 1 | | | | 1 | | |
| | **Total Social Activities** | 4 | | 3 | 10 | 4 | 2 x 0 | | 20 | Current Previous % Retained | 10+4 = 14 20 14/20 = 0.7 x 100 = 70% |
| | Any additional activities | | | | | | | | | | |
| | None | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

| | **5 Most important activities** |
|---|---|
| 1 | Going to Church (76) |
| 2 | Spending time with Family (70) |
| 3 | Book club (65) |
| 4 | Weekly social club (85) |
| 5 | Taking care of Pets (her cat) (17) |

**Global ACS-UK Scores:**

Current Activity (sum total of Current Activity sectional scores) 17+15+4+14          50

Previous Activity (sum total of Previous Activity sectional scores) 26+21+10+20          77

Percent Retained (divide global Current Activity score by global Previous Activity score) 50/77 = 0.649 x 100          64.9%

**Table 1: Summary of data for time taken to administer and time taken to score the**

**ACS-UK**

| Sample | Range in seconds (minutes and seconds) | Mean in seconds (minutes and seconds) | Standard deviation (seconds) |
|---|---|---|---|
| Sample 2 time to administer (n = 11) | 290-1020 (4 m 50 s – 17 m) | 581 (9 m 41 s) | 225 (3 m 45 s) |
| Sample 1 time taken to score (n = 16) | 208-368 (3 m 28 s – 6 m 8 s) | 277 (4 m 37 s) | 47 |
| Sample 2 time taken to score (n = 11) | 255-415 (4 m 15 s – 6 m 55 s) | 310 (5 m 10 s) | 50 |
| Combined sample time taken to score (N = 27) | 208-415 (3 m 28 s – 6 m 55 s) | 290 (4 m 50 s) | 50 |

**Table 2: Summary of ACS-UK Retained Activity Scores**

| Domain | Range (%) | Mean (%) | Standard deviation (%) |
| --- | --- | --- | --- |
| Global Retained Activity Score (GRAS) | 51.09 - 89.47 | 70.10 | 10.32 |
| Instrumental Activities of Daily Living (IADL) RAS | 66.00 - 95.83 | 79.36 | 8.42 |
| Low Demand Leisure (LDL) RAS | 36.84 - 96.66 | 71.78 | 14.19 |
| High Demand Leisure (HDL) RAS | 12.50 – 100 | 57.41 | 20.27 |
| Social / Cultural (SC) RAS | 28.94 - 85.71 | 63.49 | 14.60 |

**Table 3: Summary of participant feedback and decisions made to improve the ACS-UK**

| Feedback from participants | Consideration | Decision |
|---|---|---|
| ACS-UK item 80 'Being with your spouse / partner' difficult to categorise for some participants | Problematic for widowers | ACS-UK manual will suggest therapists remove this item if client widowed |
| Choosing the 5 most important activities is challenging | ACS-NL (Jong et al., 2012) has four overview cards of smaller size activity photographs | Overview sheets of smaller photographs for all tACS-UK activities produced to assist selection |
| Items that cover a number of activities need more clarity, e.g. 14 'Managing financial matters' | Add some examples in brackets under the activity label. Reviewed cut off scores / focus group feedback from content validity survey (Laver-Fawcett & Mallinson, 2013). | Examples added, e.g., Managing financial matters (budgeting, paying household bills, online banking); 'Gambling' (placing a bet, playing the lottery, going to a casino) |
| Two participants <70 years felt most people in photographs appeared >70 years | ACS-UK designed for 65 years + so need photographs representative of the whole age group | Several items re-photographed to show people under 70 completing activities |
| Several participants unsure of purpose / not correctly identified reason for assessment. | It is important that people fully understand the purpose of an assessment. | More detailed guidelines provided in ACS-UK test manual to instruct therapists how to explain the purpose of the ACS-UK to clients. |
| Add an item for sleeping (n = 1). | ACS-UK item 15 'Taking a rest' deemed different from sleeping. Literature review related to 'sleeping' conducted. | A new item 'Sleeping' has been added to the ACS-UK. |

**Table 4 (Continued): Summary of participant feedback and decisions made to improve the ACS-UK**

| Feedback from participants | Consideration | Decision |
|---|---|---|
| Add an item to represent volunteering with people (n = 1) to show an active role of volunteering, such as working with children or adults. | ACS-UK item 79 'Volunteer Work' can include a wider range of volunteering activities. | Examples in brackets added 79 'Volunteer work' (volunteering with people, charity work, fundraising). |
| Add an item for doing jigsaw puzzles (n = 2). | 'Putting together puzzles' had mean frequency above the cut-off in Content validity study. But was combined following focus group: 32 'Doing Puzzles / Crosswords' | New item 'Doing Jigsaws' added. |
| Football not included (n = 1); not clear if participant was referring to playing or watching football. | Further examples for 30 'Going to watch a sports event' and 62 'Exercising' needed. | Examples added e.g. 62 'Exercising' (playing a sport, attending exercise classes). |
| Add item for 'playing an instrument' (n = 1). | Playing instrument had not met the cut-off level for inclusion in content validity study (Laver-Fawcett & Mallinson, 2013). | People can add up to 5 activities that are not included on the ACS-UK activity cards (see Appendix 2. |