

The Client-Clinician Assessment Protocol (C-CAP): Evaluation of Its Psychometric Properties for Use With People Aging With Disabilities in Need of Home Modifications

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key words: activities of daily living, self-report, Rasch analysis

ABSTRACT

The objective of this study was to evaluate aspects of the validity and reliability of the Client-Clinician Assessment Protocol (C-CAP) Part I. C-CAP data for 103 people aging with disabilities in need of home modification services were analyzed using the Rasch rating scale model. The C-CAP Part I consists of a client self-report of ability in daily life tasks comprising three scales (independence, difficulty, and safety). The analysis demonstrated support for internal scale validity, person response validity, and person separation reliability of the C-CAP Part I, although the results differed among the three scales. The results of this study indicated that the C-CAP Part I has psychometric strengths and limitations. The instrument has the potential to be used in the home environment with people who are aging with disabilities. The C-CAP could complement already existing tools that are used to assess functioning in activities of daily living, especially regarding the focus on the clients' self-report of difficulty and safety in daily life at home and in the community.

The objective of this study was to evaluate aspects of validity and reliability (internal scale validity, person response validity, and person separation) of the Client-Clinician Assessment Protocol (C-CAP) Part I (Gitlin & Corcoran, 2000) with a sample of people aging with disabilities in need of home modifications services. Through collaboration between researchers and occupational therapists working in geriatric settings, the C-CAP was developed in the United States in response to the need for an instrument that included a focus on clients' self-reported abilities in daily life in their home environment and the community (Gitlin & Corcoran, 2000). It provides information about people's perceptions of their independence, difficulty, and safety in

performing daily life tasks, which are important in supporting community living for the growing population of people aging with disabilities (Albrecht, Jette, Petri, & Siegel, 2001). The need for this type of tool has been supported by several authors who indicated that knowledge and understanding of the client's perceptions of his or her abilities is considered crucial for evaluating and facilitating occupational performance (Kielhofner, 2002; Rogers, Holm, & Stone, 1997; Steinfeld & Danford, 1999).

In contrast, many existing instruments used in home and community environments are designed to assess the client's ability based on professional observation (e.g., Assessment of Motor and Process Skills) (Fisher, 2005). Guralnik, Branch, Cummings, and Curb (1989)

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argued that observational assessments of ability in daily life are preferred. Observation alone, however, is considered limited when evaluating daily life tasks in the home environment (Fänge & Iwarsson, 2005; Reuben et al., 2004; Rogers et al., 1997; Steinfeld & Danford, 1999). Enabling the client to express his or her perceived needs related to daily life task performance has proven to be more efficient and to lead to more beneficial outcomes (McCreadie & Tinker, 2005).

The C-CAP was based on the Competence-Environmental Press framework (Lawton & Nahemov, 1973), Personal Control Theory (Schultz & Heckhausen, 1999), and an early version of the Model of Human Occupation (Kielhofner, 1995). It consists of four parts: Part I is a client self-report of perceived ability to perform daily life tasks (e.g., self-care, home maintenance, and leisure), and Parts II to IV consist of performance-based assessments of the client's ability to perform daily life tasks and of the impact the home environment has on his or her occupational performance. The current study focused on the three scales in the C-CAP Part I.

According to the theoretical framework of the C-CAP, the client's ability to perform daily life tasks is viewed as a result of the interaction between the person, the task, and the environment (Gitlin & Corcoran, 2000). Within this framework, a client's ability to perform daily life tasks is not just related to the level of functional independence; the C-CAP Part I also includes other important dimensions of self-reported occupational performance (difficulty and safety in daily life).

A client's perceived level of difficulty is considered important for enabling occupational performance because perceived difficulty tends to restrict activity engagement (Simonsick, Guralnik, & Fried, 1999) and predicts risk for dependency and disability (Fried, Young, Rubin, & Bandeen-Roche, 2001; Gill, Robison, & Tinetti, 1998; Jagger, Arthur, Spiers, & Clarke, 2001). Likewise, a client's self-reported level of safety is viewed as an important factor in facilitating occupational performance in the home environment because feelings of decreased safety reduce occupational performance (Mann, Hurren, Tomita, Bengali, & Steinfeld, 1994; Zimmer & Chappell, 1999). Lack of safety is also one of the most common reasons for needing assistance and placement in nursing homes (Socialstyrelsen, 2002).

When comparing the C-CAP to other commonly used instruments of activities of daily living (ADL), important differences can be seen. Well-known instruments, such as the Functional Independence Measure (Keith, Granger, Hamilton, & Sherwin, 1987), the Index of ADL (Katz, Ford, Moskowitz,

Jackson, & Jaffe, 1963), and the Barthel Index (Mahoney & Barthel, 1965), have been developed for clinical settings and focus on functional independence in personal activities of daily living (PADL).

However, for the client living in the home environment, it is important that the instrument also include instrumental activities of daily living (IADL) because these are the necessary tasks performed in the home environment (Iwarsson, 2005; Lawton & Brody, 1969). Unlike the Assessment of Motor and Process Skills (Fisher, 2005), an observational assessment of PADL and IADL, the C-CAP Part I is a self-report. Although the Older American Resources and Services (Fillenbaum, 1988) can be based on self-report or interview, it has been developed for the home setting and includes both PADL and IADL; it focuses on functional independence, not the client's self-perception of difficulty or safety in daily life.

Although the C-CAP holds promise in filling a needed gap among existing tools, its psychometric properties are still unknown. Therefore, Rasch measurement methods were used in the current study to implement preliminary psychometric analyses of the C-CAP Part I to evaluate internal scale validity, person response validity, and person separation reliability. According to the family of Rasch models, a scale should measure a single, unidimensional construct to demonstrate evidence of internal scale validity. More specifically, Rasch analyses generate goodness-of-fit statistics that are used to evaluate how well each item fits the assumptions of the Rasch model. When at least 95% of the items demonstrate acceptable goodness-of-fit, there is evidence to support unidimensionality.

Rasch analyses also generate person goodness-of-fit statistics that can evaluate how well the response patterns of the participants fit the assumption of the Rasch model. Evidence of person response validity indicates that the instrument can be used in a valid manner with people similar to those in the tested sample even if their levels of ability vary (Bond & Fox, 2001). Finally, Rasch analyses also yield separation statistics that indicate whether the scale can reliably differentiate a group of people into different levels (Bond & Fox, 2001; Fisher, 1992). High separation is needed for a test to be used as a sensitive outcome measure (Streiner & Norman, 2003) because tests have to be sensitive to detect changes that may occur.

In this study, the specific research questions were: (1) Do the items in each of the three scales in the C-CAP Part I (i.e., independence, difficulty, and safety) demonstrate evidence of internal scale validity as indicated by goodness-of-fit of the items within each scale to the respective Rasch rating scale model?, (2) Do people in need of home modifications demonstrate person re-

Table 1
**Demographic Characteristics of the People Aging
 With Disabilities in Need of Home Modifications
 (N = 103)**

Characteristic	Total
Gender	
Female	70
Male	33
Age (y)	
Mean (SD)	74 (11)
Range	41 to 93
Type of dwelling	
One family house	12
Apartment	91
Living status	
Live alone	64
Live with someone	39
Requested home modification	
Replace bathtub with shower	50
Automatic door opener	39
Stair lift	13
Special toilets	8
Ramp	8
Handrail	7
Modified faucet	4
Other bath	2
Door widening	1
Garage for electric wheelchair	1

SD = standard deviation.

sponse validity as indicated by acceptable goodness-of-fit of the people to the Rasch rating scale model for each scale?, and (3) Do the items in each of the three scales reliably separate the distribution of people into different levels?

Method

This study is part of a larger ongoing longitudinal study. The data analyzed for this study were collected between the fall of 2002 and spring of 2004. An ethics research committee at Karolinska Institutet, Stockholm, Sweden, approved the study.

In Sweden, every local authority is obliged by law (Svensk Författningssamling, 1992) to provide home modifications funded by a grant to people with disabilities living in the community. The grant covers all costs for home modifications that are viewed as nec-

essary for people to actively participate in activities in their homes. The decision concerning approval or refusal of the application for home modification is made by the local Agency of Home Modifications (AHM) in conjunction with the applicant (Boverket, 2000).

Participants

Study participants were recruited from the AHM in a large city in Sweden between 2002 and 2004. Recruitment was implemented through collaboration between the researchers and the professionals (i.e., occupational therapists and physical therapists) working at the AHM. The recruitment process started with the researchers providing both oral and written information (i.e., study aim and description of study design) concerning the research project to the professionals at the AHM. The professionals were also provided with information concerning identification of potential participants according to the inclusion criteria.

The inclusion criteria for participation in the study were men and women who were (1) 40 years of age or older, (2) living in a community-based dwelling, (3) able to communicate in Swedish and actively participate in the study, and (4) in need of home modifications related to difficulties in at least one of following areas: getting in and out of the home, movement indoors, or PADL in the bathroom. Criteria for exclusion were people with reduced cognitive status, which was determined based on a Mini-Mental State Examination scale score lower than 19 (Folstein, Folstein, & McHugh, 1975), or depression, which was determined based on Center for Epidemiologic Studies Depression scale scores of 24 or above (Radloff, 1977).

The professionals at the AHM identified potential participants who met the inclusion criteria. The maximum number of people the researchers could evaluate each month was 10, so the first 10 consecutive people in the pool each month who met the inclusion criteria were recruited to the study. The professionals at the AHM then made initial contact with the potential participants, informed them about the research project, and asked for their consent to have their personal data (i.e., name and address) given to the researchers. Written information about the research project was then sent to the potential participants by the researchers. The letter was followed by telephone contact during which verbal informed consent was obtained and an appointment for a home visit was scheduled.

In total, 137 people who met the inclusion criteria were invited to participate in the study and 103 agreed to participate. There were no significant differences in age and gender between those who agreed to participate and those who did not. The participants' demographic characteristics are listed in Table 1. Most of

Table 2
Rating Scale Categories Used in the C-CAP Part I

Level of Independence	Level of Difficulty	Level of Safety
4 = independent	5 = no difficulty	3 = feel safe
3 = use technical device or adaptation only	4 = a little difficulty	2 = feel somewhat safe
2 = use person help only	3 = moderate difficulty	1 = feel moderately or very unsafe
1 = use both person and device	2 = a lot of difficulty	
	1 = unable to do at all	

C-CAP = Client-Clinician Assessment Protocol.

the participants were female and lived alone in apartments. The most common requested home modification was replacing bathtubs with showers.

Data Collection and Procedure

As previously mentioned, the C-CAP consists of four parts, which are administered separately and are not summed to create a total score. The parts can be administered alone or together; the combined use of all four parts provides a broader understanding of the client's occupational performance. In the C-CAP Part I, the client is asked to rate his or her perceived level of independence, difficulty, and safety (Table 2) on 18 daily life activities (Table 3). The 18 activities represent a broad set of items (i.e., PADL, mobility, IADL, and leisure) because the C-CAP was designed to be applied to clients living in community settings with a wide variety and severity of disabilities.

The C-CAP Part I also has an additional self-report of willingness to learn new strategies. This "scale" is considered a checklist for the occupational therapist and the client to use to identify tasks that need interventions (Gitlin & Corcoran, 2000). This scale was not analyzed in the current study because it would not be appropriate to attempt to convert it to a linear scale of measurement. The C-CAP was originally written in English, then translated into Swedish, and then translated back into English (Beaton, Bombardier, Guillemin, & Ferraz, 2000). In this study, the Swedish version of the C-CAP Part I (Lilja, 2002) was used.

Four research assistants who underwent specific training collected data at home visits. The data were collected between 1 and 12 months after the participants had applied for home modifications but before their modifications were installed. The C-CAP Part I was administered orally. The researchers read the questions and the response options to the participants and their responses were recorded in the C-CAP chart by the researcher (Gitlin & Corcoran, 2000).

Data Analysis

The data were subjected to Rasch rating scale analyses (Bond & Fox, 2001) using the FACETS (Version 3.54) (MESA, Chicago, IL) computer software program (Linacre, 1994-2005). The FACETS program was developed to allow for multifaceted analysis but is equally appropriate for more simple two-faceted Rasch rating scale analyses. The program generates goodness-of-fit statistics for both items and people to evaluate whether the items and people fit the assertions of the relevant Rasch measurement model. The simple Rasch model asserts that the more able a person is, the more likely it is he or she will be able to pass harder items than a less able person would be able to, and that the easier the item, the more likely it is to be passed by all people than a harder item (Bond & Fox, 2001).

For the current study of the C-CAP Part I, the basic assertions of the Rasch rating scale model were applied to each of the three scales. For example, the assertions for the difficulty scale can be expressed as the following: (1) the lower the level of self-perceived difficulty in performing daily life tasks, the more likely it is the person will report no difficulty in performing tasks that are perceived as more difficult than will a person of higher self-perceived difficulty; (2) the daily life tasks that are perceived as least difficult are more likely to be reported as being performed with no difficulty by all people than are tasks perceived as being more difficult.

Before proceeding to the main research questions, we first examined the psychometric properties of each of the rating scales in the C-CAP Part I. More specifically, we examined the rating scales to ensure that there was no measure disordering, as indicated by an increasing average measure and outfit $MnSq < 2.0$ across rating scale categories (Linacre, 2002). If no measure disordering was identified, we proceeded to examine the items and the people for goodness-of-fit, as indicated by infit $MnSq < 1.4$ with an associated $z < 2$ (Wright & Lina-

Table 3
Summary of Results Concerning the C-CAP Part I's Validity and Reliability for People Aging With Disabilities in Need of Home Modifications

Criteria	Independence Scale	Difficulty Scale	Safety Scale
Internal scale validity ($MnSq \leq 1.4$ and $z < 2$, at least 95% of items should fit)	Not acceptable, 78% of items (14 of 18) met criteria	Acceptable, 95% of items (17 of 18) met criteria	Acceptable, 95% of items (17 of 18) met criteria
Person response validity ($MnSq \leq 1.4$ and $z < 2$, at least 95% of people should fit)	Acceptable, 97% of people fit criteria	Acceptable, 96% of people fit criteria	Acceptable, 100% of people fit criteria
Person separation (separation index ≥ 1.5)	Acceptable, 2.11	Acceptable, 1.94	Not acceptable, 0.90

C-CAP = Client-Clinician Assessment Protocol.

cre, 1994). Because 5% ($p < .05$) of the items and the people are expected to misfit by chance, we set our criteria for internal scale and person response validity being met when 95% of the items and the people demonstrated acceptable goodness-of-fit to the Rasch rating scale model. Because the C-CAP Part I contains 18 items, we accepted 17 items showing acceptable goodness-of-fit to the Rasch rating scale model as adequate preliminary evidence of internal scale validity. Finally, we examined the person separation index to determine whether the three scales in the C-CAP Part I could reliably separate the distribution of people into different strata. Our criterion for minimal acceptable person separation was set to 1.5 (Fisher, 1992). Further information about Rasch measurement methods can be found elsewhere (Bond & Fox, 2001).

Results

A summary of the results for the internal scale validity, person response validity, and person separation of the C-CAP Part I can be found in Table 3.

Internal Scale Validity

The results of the initial Rasch analysis for each of the three rating scales did not identify any measure disordering or unacceptable rating scale category outfit values. We proceeded, therefore, to evaluate goodness-of-fit for the items. The difficulty and safety scales (Table 4) demonstrated acceptable goodness-of-fit for 17 items with the Rasch rating scale model. The item "bath/shower" failed to demonstrate goodness-of-fit on both the difficulty and safety scales. Because 95% of the items demonstrated acceptable goodness-of-fit, and one item is not considered a threat to the internal scale validity, we concluded that we had preliminary evidence that

the difficulty and safety scales defined single unidimensional constructs.

However, the independence scale did not show preliminary evidence of internal scale validity. Four of the items ("feed self," "do light housework," "take medication," and "leisure and social activities") failed to demonstrate goodness-of-fit to the Rasch model (Table 4). We concluded, therefore, that the independence scale cannot be considered to define a single unidimensional construct.

To determine the effects of these four misfitting items on the estimation of the independence measure, these items were iteratively omitted from the scale and a new analysis on the remaining 14 items (showing no evidence of misfit) was conducted. When comparing the measures generated with and without the inclusion of the four misfitting items, the participant independence measures differed by 0 to 1.63 logits ($M = 0.23$, $SD = 0.26$). Although the mean difference (0.23 logit) suggests no serious disruption of the misfitting items on the person measure, nine people had differences in their independence measures that were 0.50 logit or greater and three had differences that were 1.0 logit or greater in magnitude. These findings suggest that disruption occurs for some people.

Person Response Validity

Analysis of the goodness-of-fit of the people to the assertions of the respective Rasch rating scale model revealed acceptable values for all three scales, providing evidence for person response validity. Approximately all of the 103 participant response patterns demonstrated acceptable goodness-of-fit (independence = 97%, difficulty = 96%, safety = 100%). Examination of participants who failed to demonstrate acceptable goodness-of-fit to the Rasch rating scale model did not reveal any distinct pattern by item, gender, age, or requested home modification.

Table 4
Item Measurement Report for the Independence, Difficulty, and Safety Scales for People Aging With Disabilities in Need of Home Modifications

Item	Independence Scale ^a			Difficulty Scale ^a			Safety Scale ^a		
	Measure	Infit MnSq ^b	Infit z	Measure	Infit MnSq ^b	Infit z	Measure	Infit MnSq ^b	Infit z
1. Feed self	-1.36	1.58	2.1	-1.49	1.42	1.4	-0.98	1.05	0.2
2. Dress upper body	-0.86	1.04	0.2	-0.41	0.84	-0.8	-0.56	0.72	-0.8
3. Dress lower body	-0.43	0.99	0.0	0.28	0.60	-3.0	-0.08	0.96	0.0
4. Grooming	-1.67	1.28	1.0	-1.26	0.95	-0.1	-1.69	0.87	0.0
5. Bath/shower	1.21	1.07	0.5	0.87	1.73	4.6	2.07	1.44	2.7
6. Transfer to toilet	0.10	0.59	-2.8	-0.51	0.70	-1.5	-0.44	0.71	-0.9
7. Get in/out of the house	1.06	0.83	-1.2	1.16	1.22	1.7	1.92	1.34	2.1
8. Walk indoors	-0.12	0.60	-2.5	-0.66	0.74	-1.2	0.21	1.04	0.2
9. Walk a block	1.07	0.72	-2.0	0.61	0.84	-1.0	1.41	1.19	1.0
10. Managing stairs	0.43	1.00	0.0	1.41	0.78	-1.7	2.03	0.88	-0.6
11. Move in/out of bed	-0.46	0.59	-2.3	-0.06	0.63	-2.4	-0.15	0.65	-1.3
12. Get on/off of chair	-0.48	0.75	-1.2	-0.23	0.67	-1.8	-0.52	1.03	0.2
13. Get in/out of car	0.22	1.26	1.4	0.40	0.68	-2.2	-0.17	0.91	-0.2
14. Prepare meals	0.06	1.18	0.9	-0.10	1.33	1.6	-0.17	0.75	-0.7
15. Do grocery shopping	1.57	0.80	-1.4	0.99	1.02	0.2	0.77	1.01	0.1
16. Do light housework	0.69	1.44	2.0	1.08	1.16	1.1	-0.71	0.74	-0.3
17. Take medication	-1.09	1.79	2.9	-2.38	1.09	0.3	-2.68	0.96	0.2
18. Leisure and social activities	0.06	1.58	2.7	0.30	1.36	2.0	-0.26	1.01	0.1

^aItem separation indices: independence = 4.45, difficulty = 5.89, safety = 2.90.

^bBold italics indicate unacceptable goodness-of-fit; outfit values (not reported) did not differ substantively from the reported infit statistics.

Person Separation Reliability

The person separation indices for the independence and difficulty scales met the minimum criterion for separation. The person separation index for the independence scale was 2.11, indicating that the scale can separate the sample into at least three distinct strata (i.e., three different levels of ability). The difficulty scale had a person separation index of 1.94, which indicated that the scale may separate our sample into two strata (Fisher, 1992). The person separation index for the safety scale was 0.90. The safety scale did not meet the minimum criterion and, therefore, cannot be considered as being able to separate our sample into different levels of perceived safety.

Discussion

The purpose of this study was to use Rasch rating scale analysis to conduct a preliminary psychometric evaluation of the three scales in the C-CAP Part I using a sample of people aging with disabilities in need

of home modifications. The results provided some evidence of internal scale validity, person response validity, and person separation reliability, although the qualities of the three scales differed. One positive result was that most of the participants included in this study demonstrated patterns of response across items that were consistent with the assertions in the Rasch rating scale model. This result indicates a potential for the C-CAP to be applied to a similar sample of people aging with disabilities in the home environment. However, the analysis also identified some less than satisfactory results, including low person separation indices, especially for the safety scale, and unacceptable goodness-of-fit of four items on the independence scale.

Low separation has been found in other instruments that assess performance in daily life tasks, especially in measurements based on self-report (Doble & Fisher, 1998; Guralnik et al., 1989; Reuben et al., 2004). Although self-reports have the advantage of engaging the client in the assessment process, performance-based assessments may be more sensi-

tive indicators of change. The drawback to performance-based assessments is that they often reduce the client's involvement.

Because the C-CAP Part I is intended to be used as a measure of change, potential solutions to improve separation were considered. One reason for low separation could be off-targeting (i.e., item difficulty is not matched to the people's abilities) (Bond & Fox, 2001). When considering the current sample, better item targeting would be achieved if new harder items were added to the C-CAP Part I. Another possibility would be to revise the rating scales so higher levels are required to receive higher ratings. It is important, however, to also note that separation for the difficulty scale was sufficient to separate our sample into at least two levels (Fisher, 1992). Moreover, it is possible that sample homogeneity also contributed to low separation. This would mean that the C-CAP Part I may be able to separate a group of clients into different levels if they actually differed. Therefore, we recommend further research before considering revising the scales, including evaluating separation based on a more heterogeneous target sample.

Finally, it is also important to point out that low person separation in the C-CAP Part I does not indicate that the instrument is unreliable, but high separation is important if an instrument is to be used as an outcome measure (Streiner & Norman, 2003). The results of this study, therefore, indicate that the safety scale in particular may not be useful as an outcome measure, or at least that it should be used with caution.

A potentially more serious problem in the C-CAP Part I was found for the independence scale, where four items (feed self, do light housework, take medication, and leisure and social activities) did not demonstrate acceptable goodness-of-fit to the Rasch rating scale model. This indicates some disturbance in the scale, and the possibility that it might contain items representing more than one construct. Lack of unidimensionality is a problem that needs to be addressed.

Another possible explanation for the lack of goodness-of-fit was that the rating criteria are not clear. Moreover, because the clients are asked whether they need any support, it is possible that those who received support from others might have indicated that they needed support even if they could perform the task independently. Because these four items are important when assessing occupational performance both in the home and in the community, consideration should be given to revising these items or the rating criteria or removing them if future analysis reveals that these items continue to misfit.

Psychometric evaluation studies on other well-known instruments that assess functional independence, such as the Functional Independence Measure (Linacre, Heinemann, Wright, Granger, & Hamilton, 1994; Nilsson, Sunnerhagen, & Grimby, 2005) and the modified version of the Barthel Index (Küçükdeveci et al., 2000), have also found several items that failed to demonstrate goodness-of-fit with the Rasch measurement model. Among the misfitting items for both instruments was eating. These findings are in accordance with and support the results in this first evaluation of the C-CAP, where the feed self item did not meet the assertions of the Rasch rating-scale model. Although IADL and PADL have been shown to reflect one construct (Fisher, 1997), leisure and medication may have different characteristics than personal or domestic daily life tasks, such as eating.

Although the remaining scales (i.e., difficulty and safety) demonstrated adequate item goodness-of-fit, it should be noted that one item, "bath/shower," showed unacceptable goodness-of-fit across the two scales. It is interesting that the same item did not meet the assertions in the Rasch rating scale model. Examination of the unexpected responses on this item showed that these people rated themselves less able than expected. For example, on the difficulty scale they reported more difficulties with bathing or showering than expected.

Because replacing a bathtub with a shower was one of the most requested home modifications in this sample, it is possible that the unacceptable goodness-of-fit for this item could be sample dependent. That is, the participants may have overestimated their difficulties to highlight their need for the home modification. However, it could also be that the participants used in this sample actually had difficulty using bathtubs, causing this item to misfit. One could also wonder whether cultural aspects may underline our findings because designs of bathtubs may differ across cultures and can therefore affect people's ability to bathe. In support of this possibility, Tennant et al. (2004) found cross-cultural differential item functioning on the bathing item of the Functional Independence Measure.

Because the bath/shower item is an important task for functioning in daily life, attempts should be made to resolve this issue because it would be unwise to remove it from the C-CAP. For example, one resolution might be to have one item for shower and one for bathtub so those who have and use a shower and those who use a bathtub are scored on separate items. Further research on this item is needed to evaluate for differential item functioning or variations in goodness-of-fit between different cultures.

This study has some methodological considerations that should be taken into account. First, the chosen sample for this study, people aging with disabilities in need of home modification services, is considered to be an appropriate group for evaluating the C-CAP Part I despite a possible lack of heterogeneity. Interventions in the home, including home modification, are often provided to people with functional limitations with the purpose of facilitating sustained living or higher independence (American Association of Retired Persons, 2003; Socialstyrelsen, 2002). However, it is important to emphasize that the C-CAP is intended to be used with a broad group of people living in the home environment, not just with people in need of home modifications.

Another methodological consideration of importance for this study was the sparse guidelines in the manual to the C-CAP Part I due to the fact that the manual is under development. To avoid diverse interpretations of the existing manual guidelines, the data collectors in this study held discussions prior to and during data collection. Consensus concerning the instrument's application, content of items, and rating scale categories was reached and applied during data collection. Nevertheless, a more thorough manual with clearer scoring guidelines is needed.

This preliminary evaluation of validity and reliability has identified both strengths and limitations of the three scales in the C-CAP Part I. The main identified limitations were the lack of unidimensionality in the independence scale and the low person separation in the safety scale. The misfitting items in the independence scale may need to be omitted and new items added for the scale to reach the criterion unidimensionality. The difficulty and the safety scales are considered the strengths of the C-CAP Part I. These scales showed acceptable internal scale validity and person response validity, although they did show a somewhat low person separation. Separation will likely improve by applying the assessment to a more diverse sample or by adding new and harder items. Revisions of the bath/shower item may be indicated, but such revisions should be deferred until future research verifies whether the source of misfit was unique to our sample.

Clinical Implications

Finally, although further development and research is needed, the C-CAP Part I has the potential to complement already existing clinical tools that assess functioning in ADL, especially regarding the C-CAP Part I's combined focus on the client's self-perceived difficulty and safety in daily life. For people with disabilities who are aging at home, decreased

difficulty and increased safety are critical even for many who are still able to perform the task independently. Therefore, knowledge provided with the C-CAP Part I could be valuable not only for occupational therapy practice, but also in research concerning the needs and effects of interventions aimed toward enhancing people's abilities to remain in the home and fully participate in their daily lives.

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