Journal of Gerontology: MEDICAL SCIENCES
1995, Vol. 50A, No. 1, M28–M34

The Activities-specific Balance Confidence (ABC) Scale

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Background. This study provides a replication of the Falls Efficacy Scale (FES) and a head-to-head comparison with the Activities-specific Balance Confidence (ABC) Scale designed to include a wider continuum of activity difficulty and more detailed item descriptors.

Methods. Items for the newly developed 16-item ABC Scale were generated by 15 clinicians and 12 elderly outpatients. Psychometric testing involved 60 community seniors (aged 65–95) self-classified as either high or low in mobility confidence according to their perceived need for a walking aid and personal assistance to ambulate outdoors.

Results. Both the FES and ABC scales were found to be internally consistent and demonstrated good test-retest reliability, convergent and criterion validity. Scalogram analyses indicated a stronger cumulative scale in the case of the ABC and skewness in the distribution of FES scores. While both scales were able to discriminate between the two mobility groups, the ABC scale was a more efficient discriminator and yielded a wider range of responses.

Conclusions. The present study provided additional psychometric support for the FES. However, the greater item responsiveness of the ABC scale makes it more suitable to detect loss of balancing confidence in more highly functioning seniors. Greater situation-specificity of items may also assist clinicians in targeting appropriate interventions.

FALLS in the elderly constitute a significant challenge for both rehabilitation and prevention. Thirty to fifty percent of persons over age 65 fall each year (1–3). In persons over 80, the prevalence of falls increases to 40% (2,3). This is probably an underestimation of the problem, given that only falls leading to physical injury or loss of function are typically reported (4). Fractures, soft tissue injuries, joint dislocations, and mobility impairments occur in about 15–20% of falls (2–4).

Related psychological trauma, identified as part of the "post-fall syndrome" (5–7), can lead to further activity restriction and reduced independence that may be self- rather than injury-imposed. This loss of confidence or "fear of falling" has been observed in 50–60% of reported fallers in three different community samples (3,8,9). Between 25–33% of these subjects further acknowledged avoidance of activities because of this fear (3,8). However, fear of falling has also been observed in seniors who have not experienced any fall episodes or related injuries (9,10). Thus, fear of falling may be an even more pervasive problem for the elderly population (9). Fear of falling is important to assess for two reasons. First, it is a likely confound in measuring postural performance. Subjects who said they were "fearful" exhibited significantly poorer performance scores in blindfolded spontaneous-sway tests and in the one-legged stance test (9). Secondly, deterioration in the physical ability to balance may result from activity restriction mediated through fear of falling.

Only recently, however, have attempts been made to quantify fear of falling (3,8,9). One approach is to simply ask individuals whether or not they are afraid of falling (3,8). For instance, Maki et al. (9) used the closed ended question, "Are you afraid of falling?" The responses "very much" and "somewhat" were coded as fearful, while "not at all" indicated no fear. A dichotomous response format ("Yes"/"No") has also been used (3,8). Tinetti et al. (8) developed the first continuous measure in the area — the Falls Efficacy Scale (FES) — which consists of 10 activities of daily living (ADL) commonly performed by seniors. Adequate test-retest reliability and preliminary support for the convergent and criterion validity of the FES have been reported (8).

By operationalizing "fear of falling" as a continuum of self-confidence, the FES was modeled using Bandura's theory of self-efficacy (11). Self-efficacy is defined as the individual's perceptions of his or her capabilities (or self-confidence) within a particular domain of activities. Bandura's theory would argue that one's cognitive appraisals, whether accurate or not, will either facilitate or hinder an individual's decision to engage in a particular activity (11,12). For instance, a person who has a high degree of self-efficacy in balancing abilities might tend to engage in potentially more hazardous activities (such as standing on a chair), while a person with low self-efficacy would tend to avoid such activities. However, Bandura has also cautioned that perceived self-efficacy will only generalize to highly similar situations; thus the measurement of self-efficacy should be situation-specific (11,12).

Although restricted to the domain of daily activities, the scale items on the FES consist of fairly global activities (e.g., "simple shopping" or "reaching into cabinets or closets") which could lead to inconsistent individual interpretation. For instance, a person's confidence in retaining their balance while "reaching" could be expected to vary

greatly depending on the circumstances (e.g., reaching for something at eye level as opposed to reaching upwards while standing on a chair). In addition, more situation-specific questionnaire items of self-rated difficulty in ADLs show better correspondence with performance measures (13).

A second concern is that the FES may not be sensitive enough to assess loss of balance confidence in higher functioning seniors. In Tinetti et al.'s sample (8), FES scores tended to cluster at the high confidence end of the scale (potential range 10 to 100, mean = 25), indicating a possible ceiling effect. Tinetti et al. (8) suggested the need for replications using other community samples to demonstrate the variability in FES scores.

The purposes of the present study were to carry out an independent replication of the FES and to conduct a head-to-head comparison of the FES with a more situation-specific measure of balance confidence. The newly developed measure — The Activities-specific Balance Confidence (ABC) Scale — purposefully included a wider continuum of activity difficulty and more detailed activity descriptors.

The use of walking aids has been used to test the discriminating ability of various balance tests (14). However, use of a walking aid could reflect poor balancing ability, low self-confidence, or both. A further indicator of mobility-related confidence is the perception that one needs personal assistance to ambulate safely outside the home. In the present study, subjects were classified as low (versus high) in general mobility confidence according to two criteria — self-reported use of a walking aid as well as physically related, personal assistance to leave their homes.

METHODS

This study involved three phases: (a) development of the ABC instrument using a convenience sample of 15 clinicians (physical and occupational therapists) and 12 outpatients (over age 65) receiving physiotherapy; (b) psychometric testing in which a 45-minute structured interview was administered to a separate sample of 60 seniors in their own homes or at their seniors club; and (c) readministration of the ABC, approximately two weeks later, to the first 21 subjects who had agreed to undergo postural balance testing.

Scale Development

Similar to Tinetti (8), clinicians were asked to "name the 10 most important activities essential to independent living, that while requiring some position change or walking, would be safe and nonhazardous to most elderly persons." Unlike Tinetti, we also asked a sample of seniors the above question, plus an additional question: "Are you afraid of falling during any normal daily activities, and if so, which ones?"

Psychometric Testing

Subjects. — A total of 102 eligible persons (over age 65, living in the community) were approached to obtain 30 "high" and 30 "low" mobility volunteers. Recruitment was purposefully conducted at a seniors center and walking club for the former group, and at home care and day care agencies for the latter group. For convenience, 18 high mobility and 7 low mobility subjects were obtained from outpatients receiving physiotherapy at a community hospital. The outpatient subjects did not differ from their high and low mobility counterparts in living arrangements, age, health problems, or fall and injury histories.

Seventeen males and 43 females between the ages of 65 and 95 were interviewed. Fifty-three percent lived alone; 37% lived with their spouse. The most frequently reported types of health problems were arthritis/rheumatism (67%), circulatory and blood-related disorders (62%), vision (48%), foot (45%), and hearing (42%) problems. During the summer months, 70% of the sample reportedly went out daily, while only 5% went out less than once a week. During the winter, however, only 35% went out daily; 22% went out less than once a week.

Not surprisingly, walking aids were reportedly used by more persons outside (n = 34) versus inside (n = 26) the home. Canes were the most frequently used type of aid (~70% of users), followed by walkers. Only 4 subjects used a scooter. While 5 of the subjects classified as "high" in mobility used a walking aid (1 indoors only, 3 outdoors only, 1 both), none of these subjects reported needing personal assistance (apart from transportation) to leave their homes. In contrast, all 30 subjects in the "low" mobility group reportedly received such assistance. Only one subject in this group did not also use a walking aid outdoors. Since this person indicated further that she could not leave her home without personal assistance, she was classified as "low" mobility.

Protocol. — The structured interview began with background information including health, mobility patterns, and recent fall history. In the latter section, subjects were asked: "Have you fallen in the past year (meaning ending up on the floor or ground unintentionally)?" If they responded affirmatively, they were further queried as to the number of falls, activity engaged in during the fall(s), and injuries sustained/treatment received as a result. They were then asked, "Are you afraid of falling?" (Yes/No), and "Has fear of falling made you avoid any activities?" (Yes/No). Wording of questions was similar to previous studies (8,9).

Subjects were then administered the 10-item FES, followed by the 16-item ABC scale. To assess convergent and discriminant validity, we administered Ryckman et al.'s Physical Self-Efficacy Scale (PSES) and Watson et al.'s Positive and Negative Affectivity Scale (PANAS) (15,16). The PSES consists of a total of 22 items that assess an individual's perception of their physical abilities — such as reflexes, agility, strength, as well as confidence in their overall physical self-presentation — such as appearance. The 20-item PANAS scale assesses both positive (e.g., excited) and negative (e.g., irritability) affectivity or emotionality.

The ABC was readministered two weeks later to a subgroup of 21 subjects who agreed to undergo balance testing. A detailed description of the test protocol — consisting of self-paced walking and force plate assessments of spontaneous postural sway — and analyses are provided elsewhere (17).

RESULTS

Development of Instrument

When asked to name the ADLs "essential to independent living, that require position change or walking, but are nonhazardous to most seniors," 8 of the 10 activities identified by our sample of clinicians were similar to those identified by Tinetti et al.'s (8). Given the wording of the question used for item generation, it is not surprising that transfers (from toilet, bed, chair), bending, reaching, and walking-related activities emerged. However, in their pretest, Tinetti found that few subjects reported low confidence on activities such as transferring off the toilet, and replaced such activities with light housekeeping and simple shopping in the final FES scale (8).

When the above question was posed to our sample of 12 physiotherapy outpatients (7 of whom had fallen in the past year), the only direct transfer-related activity mentioned was getting in and out of a car. Walking, light housekeeping, and meal preparation were the only activities selected by more than 50% of both our samples of clinicians and seniors. Shopping, on the other hand, was mentioned by 73% of the clinicians, but only by 8% of the seniors. The second question we posed to our senior sample: "Are you afraid of falling during any normal daily activities, and which ones?" yielded different responses. Walking on ice, standing on a chair, climbing stairs, and general walking were most frequently mentioned.

The items for the ABC scale were purposefully chosen to represent a wider spectrum of activity difficulty (i.e., potentially more "hazardous" ADLs) as demonstrated in a previous study of 50 ADL item rankings by 182 seniors (18). For comparison purposes, "light housekeeping," "reaching," "simple shopping," and "walking around the house" — four of the FES items — were also included on the ABC. However, the "light housekeeping" item was made more specific ("sweeping the floor"), while "reaching" was separated into four situation-specific items representing various position changes as well as varying degrees of hazardousness.

"Walking," meanwhile, was represented by several situations both inside and outside the home, both requiring and not requiring positional changes, and both with and without obvious perturbations (e.g., being bumped walking in a crowd). "Shopping," similarly, was broken down into various mobility-challenging situations people may encounter (e.g., walking in a crowded mall, using an escalator while holding/not holding the railing).

The content and order of the 16-item ABC scale and the 10-item FES are shown in Tables 1 and 2, respectively. For the ABC, we chose a 0–100% response continuum as recommended by Bandura for operationalizing self-efficacy (11,12). A second variation between the ABC and FES is the rating instruction. The latter assesses confidence in performing the various activities "without falling" (8). On the ABC, confidence is assessed via the directive "will not lose your balance or become unsteady" given that loss of balance does not necessarily result in a fall (i.e., people can recover their balance).

Table 1. ABC Items Ranked in Ascending Order of Mean Level of Confidence

Items	Mean Rating	Distribution of Responses 0–30%	31–60%	61–100%
4. Reach at eye level	89.5%	5%	7%	88%
1. Walk around house	87.5	5	5	90
9. Get in/out of car	78.5	5	27	68
8. Walk outside to nearby car	71.6	17	18	65
10. Walk across parking lot	67.7	22	20	58
7. Sweep the floor	66.8	22	17	61
2. Up and down stairs	64.8	25	17	58
3. Pick up slipper from floor	62.8	30	15	55
12. Walk in crowded mall	62.2	32	13	55
11. Up and down ramp	61.0	28	20	52
13. Walk in crowd/bumped	53.1	40	13	47
14. Escalator holding rail	52.3	37	22	41
5. Reach on tiptoes	46.5	48	8	44
6. Stand on chair to reach	38.0	59	8	33
15. Escalator not holding rail	31.3	62	15	23
16. Walk on icy sidewalks	20.7	75	12	13

Note: Items were rated from 0% (no confidence) to 100% (complete confidence).

Table 2. FES Items Ranked in Ascending Order of Mean Level of Confidence

Items	Mean Rating	Distribution of Responses 1–3	4–6	7–10
6. Answer door or telephone	1.9	88%	10%	2%
7. Get in or out of chair	2.0	87	5	8
5. Get in or out of bed	2.1	83	12	5
4. Walk around house	2.3	82	12	6
8. Dressing	2.3	80	15	5
9. Light housekeeping	2.7	73	15	12
3. Prepare meals	3.1	73	10	17
2. Reach into cabinets/closets	3.2	65	22	13
10. Simple shopping	3.3	63	20	17
1. Take a bath or shower	3.9	63	10	27

Note: Items were rated from 1 = extreme confidence to 10 = no confidence at all.

Psychometric Properties

Reliability and internal consistency. — The total ABC score was found to be highly stable over a two-week period ($r = .92$, $p < .001$). Test-retest correlation coefficients for individual items were found to be nonsignificant in two cases (car transfers, $r = .19$, and walking in the home, $r = .36$).

Cronbach's alpha was .96, indicating high internal consistency of the ABC scale. Only one of the item-total correlations was < .60 (reach from eye level, $r = .49$, $p < .001$). A stepwise deletion of each of the 16 items did not alter the internal consistency of the ABC scale. Since Tinetti et al. (8) did not report the internal consistency of the FES, we examined it with our data. Cronbach's alpha was .90, indicating good consistency for the FES scale.

Scalability. — Satisfaction of cumulative scaling criteria ensures that there are no idiosyncratic items in the instrument, that each item is able to discriminate between respondents, and that items bear a fixed relation to one another (19). Demonstration of hierarchicality can be especially useful to distinguish between individuals or groups on an underlying dimension when no gold standard is available for validation (19). Scalogram analysis examines whether items as well as respondents can be meaningfully ordered from highest to lowest (19–21).

Mokken's Stochastic Cumulative Scaling Program (MSP) was chosen over the Guttman scale analysis to examine the hierarchicality of the FES and the ABC. Compared with Guttman, the MSP can handle more than two response possibilities per item and is not restricted to 12 items in a single scale analysis (20,21). The Hi coefficients (and their weighted sum H) illustrate the extent to which separate items fit the scale as a whole. A minimum of .30 is recommended (20), but higher values for Hi and H imply fewer violations and therefore a better hierarchy. The Rho coefficient (equivalent with alpha) should be at least .70 (20). As can be seen in Table 3, the coefficients of scalability and reliability are more than acceptable for both the FES and the ABC. The H coefficient > .50 indicates a "strong" cumulative scale in the case of the ABC, while values of .40 ≤ H < .50 indicate an "average" hierarchicality in the case of the FES (20).

The results further demonstrate the skewness in the distribution of FES scores (1.6), relative to ABC scores (–.02), where a score of zero represents a normal distribution. Using three answer possibilities, the theoretical minimum score for the 10-item FES is very close to the sample mean. As can be seen from Table 2, the majority of responses fall near the end of the high confidence FES response continuum (i.e., 1–3). Even for the most difficult or lowest confidence item in the data set — taking a bath or shower — only 27% of the sample rated the item between 7 and 10. In contrast, the theoretical minimum and maximum scores for the recorded response categories on the ABC 16-item scale are 16 and 48, respectively. Table 1 illustrates the greater distribution of ABC item scores across the response categories.

Convergent and discriminant validity. — Physical Self-Efficacy Scale scores were found to be moderately correlated with both ABC scores (r = .49, $p < .001$) and FES scores ($r = -.33$, $p < .001$). As expected, higher correlations were found between the physical abilities subscale score and both the ABC ($r = .63$, $p < .001$) and FES ($r = -.54$, $p < .001$), while the general self-presentation subscale was not significantly correlated with either the ABC or FES scores ($r = .03$, $r = .12$, respectively). In comparison, none of the PSES scores significantly differentiated between the dichotomously classified fearful and nonfearful groups.

A further indicator of the discriminant validity of the balance confidence scores came from a comparison with scores on the PANAS. Correlations between the overall PANAS score and both the ABC and FES scores were low ($r = .12$ and $-.13$). Separate correlations with the subsets of negative and positive affect items were similarly low and nonsignificant. Scores on the PANAS, similarly, did not discriminate between the fearful and nonfearful subjects.

Table 3. Scalogram Analyses for FES and ABC Scales

	FES*	ABC†
Mean ± *SD*	13.6 ± 4.6	35.4 ± 9.4
Skewness	1.6	–0.2
Coefficient of scalability H	.44	.59
Coefficient of reliability Rho	.89	.95
Hi coefficients min/max	.34/.56	.35/.74

*Recoded FES scores: 1–3 = 1, 4–6 = 2, 7–10 = 3.
†Recoded ABC scores: 0–30% = 1, 31–60% = 2, 61–100% = 3.

Scale responsiveness. — Mean scores on the ABC scale shown in Table 1 ranged from a low of 21% confidence on item 16 (walking on icy sidewalks) to a high of 90% confidence on item 4 (reaching at eye level). In contrast, mean FES scores shown in Table 2 ranged from a mean of 1.9 on item 6 (answer the door or telephone) to 3.9 on item 1 (take a bath or shower). For comparison purposes, scores on the FES (1–10) were reversed and converted (by equating single point values to 11) to correspond with ratings on the ABC (0–100%). Converted FES scores ranged from a low of 68% on item 1 to a high of 90% on item 6.

To address the issue of item specificity, we correlated responses to the global FES item "reach into cabinets or closets" with the more specific ABC items dealing with reaching (No. 3–No. 6 inclusive). Correlation coefficients ranged from $r = .53$ to .67 (all $p < .001$). However, mean confidence values on these ABC items showed a clear pattern of decreasing confidence in these various situations, from a high of 90% on item 4 (reaching at eye level), 63% on item 3 (bending over to pick up a slipper), to 47% on item 5 (reaching on tiptoes), to only 38% confidence on item 6 (reaching while standing on a chair).

As expected, persons were also more confident on average walking around the house (88%) versus walking outside to a parked car (72%). Walking up and down a ramp or in a crowd was associated with even less confidence (61 and 62%, respectively) than walking outside per se. Similarly, being bumped while walking (53%), and using an escalator (52%), especially without holding the railing (31%), reduced balance confidence still further. These items were selected to represent mobility-related maneuvers that persons could encounter when going out to shop, to the bank, etc. When these ABC items (No. 9–15) were correlated with the FES item "simple shopping," coefficients ranged from $r = .42$ (getting in and out of a car) to $r = .75$ (walking across a parking lot).

Discrimination of Fallers and Nonfallers

In Tinetti et al.'s sample (8), 31 of 56 subjects, or 55% had reportedly fallen in the past year; 22 (39%) had sustained an injury. A slightly larger percentage (61%) of their sample (34 of 56) reported being afraid of falling; 27% (15 of 56) further acknowledged activity avoidance due to this fear. FES scores were not significantly different for fallers vs nonfallers, or for the injured vs not injured groups (8).

In the present sample, percentages of reported fallers (57%), injured fallers (38%), fear of falling (57%), and activity avoidance due to fear (30%) were highly similar.

Unlike Tinetti et al. (8), we examined the relationships between fall history (and injury), fear of falling, avoidance, overall mobility confidence, balance confidence, and postural performance. Detailed analyses are reported elsewhere (17). For purposes of comparison with Tinetti et al.'s study, only the relationships between falls (and related injury) and the balance confidence scores will be presented here.

Participants who had reportedly fallen in the past year had lower mean ABC scores compared to those who had not experienced a fall; however, this difference only approached significance ($p < .058$). Those who had sustained an injury during a fall also scored lower on the ABC, but were not significantly different from subjects who had fallen but not been injured. The same trends emerged when FES scores were examined.

Our sample score on the FES (mean = 26.9, SD = 18.6) was quite similar to that found for Tinetti et al.'s (8) sample (mean = 25.11, SD = 12.26), replicating their results. The converted FES score (mean = 80.9, SD = 20.8) illustrates overall higher confidence ratings compared to the ABC score (mean = 59.6, SD = 27.7). While the total FES and ABC scores were highly correlated in the present sample ($r = .84$, $p < .001$), the ABC scale was found to be a better discriminator of high vs low mobility subjects.

Discrimination of Mobility Groups

Given the selection criteria, it is not surprising that compared with high mobility subjects, the low mobility group was older (mean age = 77.7 vs 71.4, $p < .001$), reported more health problems (mean = 4.4 vs 3.0, $p < .01$), and received more formal assistance (70% vs 10%, $p < .001$). They were more likely to have fallen in the past year ($p < .06$) but did not sustain a significantly higher percentage of injuries due to falls. While avoidance of activities was significantly more common in the low mobility group ($p < .001$), the dichotomous fear of falling question did not significantly discriminate between the two groups.

On the other hand, both the mean FES scores ($t = 5.7$) and the mean ABC scores ($t = 9.34$) were significantly different ($p < .001$) for the two mobility groups — in the expected direction. High mobility subjects overall expressed more confidence than low mobility subjects on both the FES (mean = 93.4 vs 68.4) and the ABC (mean = 80.9 vs 38.3). Similar to Berg et al. (14), who assessed the relative efficacy of clinical balance measures in discriminating between users and nonusers of walking aids, effect size was calculated for the FES and the ABC, respectively, by subtracting the mean scores of the high and low mobility groups and dividing by the pooled standard deviation. The ABC demonstrated an effect size of 1.5, while the effect size for the FES was 1.2.

Finally, we compared individual item scores on the FES and the ABC for the high and low mobility groups separately in order to examine the relative utility of these scales for seniors with varying levels of functional abilities. On the FES, high mobility subjects expressed significantly more confidence for every activity except item 5 (getting in and out of bed). On the ABC, only item 4 (reach at eye level) did not significantly discriminate between high and low mobility subjects. As illustrated in Figure 1, the FES showed an adequate range of responses (from 44% to 84%) for low mobility subjects, but a highly restricted range (90% to 98%) for high mobility subjects. In contrast, scores on the ABC ranged from 5% to 84%, and from 36% to 95%, for the low and high mobility groups, respectively. Graphed scores also show a clearer separation of the two mobility groups using the ABC vs the FES.

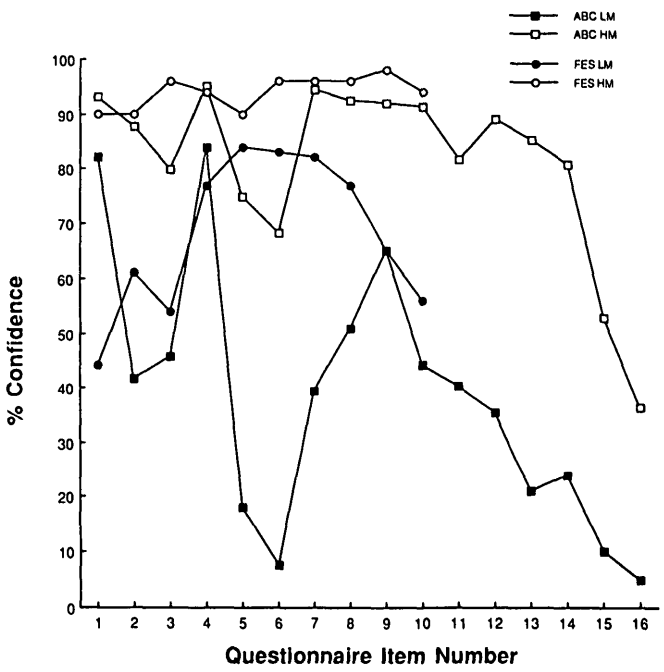

Figure 1. Mean perceived confidence ratings on the ABC and FES items for low and high mobility subjects.

Discussion

The first purpose of the present study was to replicate psychometric testing of the FES on an independent sample of community-living seniors, as suggested by the developers of the FES (8). Slightly more of the persons we approached (59% vs 54% in Tinetti's study) agreed to participate. The demographic characteristics of Tinetti et al.'s sample (n = 56), recruited from an elderly housing unit and a senior center in the U.S. (8), were similar to those of our Canadian sample (n = 60). The only difference we could discern from Tinetti et al.'s (8) sample description is that a greater proportion of their sample (84% vs 53%) lived alone. Proportions of reported falls in the past year, injuries, fear of falling, and acknowledged activity avoidance due to fear of falling were remarkably consistent in the two studies. Although Tinetti et al. did not report the proportion of their sample that used walking aids or received assistance, their inclusion criteria were being over age 65, intact cognitive functioning, and independent ambulation with or without a walking aid (8). Given the above characteristics, it is probable that the two samples were comparable in terms of range of functional abilities.

Our sample mean on the FES was also quite close to that reported by Tinetti et al. (8), although scores were more variable in our sample. Our study provided additional psychometric support for the FES based on the associations

found with scores on the Physical Self-Efficacy Scale and the lack of association with the PANAS (affectivity) scale. Furthermore, the coefficients of scalability and reliability found for the FES demonstrate hierarchical ordering of the items. The utility of the FES as a discriminative index was also supported based on significantly different scores for the high and low mobility groups. Notwithstanding, the two concerns regarding the FES identified at the outset — namely, the global nature of the items and the possible ceiling effect for higher functioning seniors — were justified based on this study's findings.

To address the above concerns, it was necessary to develop a scale that purposefully included a wider continuum of activity difficulty, and more detailed or specific activity descriptors. The newly developed ABC scale was found to be more reliable over a two-week period (r = .92) than the FES [Tinetti et al. (8) reported r = .71]. The 16-item ABC scale also showed somewhat higher internal consistency. Scalogram analysis indicated a stronger cumulative ordering in the case of the ABC, and a marked skewness in the distribution of FES scores. Somewhat stronger convergent and discriminant validity support was found for the ABC based on a higher correlation with the related physical abilities subscale of the PSES and a lower correlation with the more unrelated self-presentation subscale. While both ABC and FES scores were able to distinguish between the mobility groups, the ABC was the more efficient measure according to effect size. Compared with the ABC, the FES yielded a very restricted range of scores, particularly for higher mobility subjects.

In summary, the present study was able to replicate Tinetti et al.'s (8) results and provide additional psychometric support for the FES. However, while the FES appears adequate for assessing balance confidence in more frail seniors, the greater responsiveness of the ABC scale makes it more appropriate for assessing seniors at various levels of functioning, particularly more active persons. The range of item scores within a given domain on the ABC (such as reaching-oriented activities) indicates that situational-specificity is relevant when assessing balance confidence in daily activities, as Bandura has demonstrated in other domains (12). Furthermore, great specificity of the situations in which reduced balance confidence occurs (such as for outdoor but not for indoor activities) should assist clinicians in tailoring interventions to suit the individual (e.g., prescribing appropriate walking aids).

The downside of greater item specificity and the inclusion of activities that are perceived as more "hazardous" in nature is that some subjects may respond that they do not do the activity in question, or have not done so for some time. About a third of our sample gave such responses to at least one ABC item, most frequently to the items "walking on ice" and "using an escalator." Although less frequently, such responses also occurred for some of the household-related activities (e.g., sweeping the floor, using stairs, and reaching while on tiptoes or on a chair). In all instances, subjects were asked to imagine their degree of confidence if they did the activity. Another observation was that subjects sometimes qualified their responses. For instance, they rated their level of confidence differently for getting in (versus out) of a car, or going up (versus down) stairs. In such cases, we averaged their confidence ratings for that item. Further qualification concerned level of confidence while using their walking aid or "while holding onto someone." As previously argued (18), ADL/IADL ratings should allow for use of assistance if this is how seniors normally perform the activity. Even with probing, the longer 16-item ABC took a maximum of 5–10 minutes to administer and was acceptable (understandable) to all participants in our study.

Previous research on ADLs/IADLs has demonstrated that it is important to explore the reasons for reported nonperformance and to distinguish between physical inability and volitional factors (13,18). Such exploration is particularly critical when assessing balance confidence for purposes of therapeutic intervention since self-efficacy theory predicts that low confidence activities are most likely to be avoided (11,12). The inherent dilemma in assessing balance confidence is that by limiting items to relatively nonhazardous activities — as is the case with the FES — test scores will show a ceiling effect for higher functioning seniors. Furthermore, one cannot explore the extent to which seniors avoid certain types of activities. While therapists would never recommend that seniors stand on chairs or walk on ice, extremely high confidence ratings on such items, even for highly active persons, should alert the tester to a positive response set bias.

The results further demonstrate that the dichotomous fear of falling question should not be used for either research (i.e., to measure and control for this confound) or clinical purposes (17). On the other hand, since the dichotomous activity avoidance question was able to discriminate high and low mobility groups, this question could be used as an initial screening tool regarding balance confidence. However, the multiple items of the FES and the ABC scales render them more reliable assessment tools. Given that scalability analyses supported the hierarchical nature of both scales, a word of caution is in order. Such demonstrations have been used to justify minimal patient inquiry as opposed to administering the entire test battery (18). However, since the ordering of items is not sample-independent, and all patients do not necessarily follow a strict hierarchical order, clinicians may incorrectly stage an individual patient's status (18).

Further research is necessary to determine the sensitivity to change of balance confidence measures. In this regard, a one-year follow-up of the present sample is in progress. Tinetti et al. (8) also suggested that researchers correlate balance confidence with actual performance of daily activities. While relevant performance simulations (e.g., sweeping or getting in and out of a car) could be constructed, such performance measures are difficult to standardize, not always acceptable to patients or clinicians, and obscure vital experiential information such as motivation (13). A more fruitful line of inquiry may be further refinement of measures to assess patient expectations regarding balance training and outcome (17). Evidence is accumulating in other areas of rehabilitation that efficacy expectations are not static and can be enhanced therapeutically (12). In the area of balance rehabilitation, efficacy or confidence boosting may be as important as physical training itself.

ACKNOWLEDGMENTS

This work was supported by a Royal Canadian Legion Fellowship in Gerontology.

The authors thank the Waterloo Region Home Care, Wellington-Dufferin-Guelph Home Care, the Riverbend Day Centre, the Evergreen Seniors Centre, and the Rehabilitation Department at Cambridge Memorial Hospital for their assistance with subject recruitment. P. Holliday and Drs. B. Maki and L. Brawley provided insightful comments, while Dr. G. Kempen assisted with the Mokken analyses. Finally, N. Poole, W. Sherk and Dr. S. McColl assisted with preparation of manuscript.

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Received November 15, 1993
Accepted February 18, 1994