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EXAMINING THE VALIDITY AND RELIABILTIY OF THE ACTIVITIES-SPECIFIC BALANCE CONFIDENCE SCALE-6 (ABC-6) IN A DIVERSE GROUP OF OLDER ADULTS

by

ANTONIUS SKIPPER

Under the Direction of Dr. Rebecca Ellis

ABSTRACT

Losing confidence in the ability to maintain balance can be more debilitating than a fall. Therefore, considering the importance of measuring balance confidence, the purpose of this study was to examine the validity and reliability of the ABC-6, a shortened version of the ABC-16, among diverse older adults. Participants were 251 diverse (72.1% African Americans, 62.5% low-income, 61% low-education) older adults (*M* age = 71.2 years, *SD* = 8.9). Participants volunteered for a falls risk screening which assessed multiple falls risk factors and balance confidence. The ABC-6 had excellent internal consistency reliability, substantial intraclass correlations, significant moderate to large correlations with physical activity, mobility, balance, and total falls risk, the ability to discriminate between fallers and nonfallers, and it was the only significant predictor of total falls risk. The ABC-6 was a valid and reliable measure of balance confidence and is a suitable measure for use among diverse older adults.

INDEX WORDS: Balance confidence, ABC-16, ABC-6, Falls

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A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

Master of Arts

in the College of Arts and Sciences

Georgia State University

2012

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Antonius Skipper
2012

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by

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August 2012

DEDICATION

This thesis is dedicated to my grandmothers, the late Edna B. Smith and Maggie Skipper. Although you are no longer here, the lessons you taught me are still motivation to achieve in every field of human endeavor. Grandmothers hold our hand for just a little while, but hold our hearts forever.

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1 LITERATURE REVIEW

1.1 Introduction to the Problem of Falls

Nearly 40 million, or approximately 13%, of the U.S. population are over the age of 65 years (U.S. Census Bureau, 2010). On average, one out of every three older adults will fall at least one time annually (Centers for Disease Control and Prevention, 2011), and fall rates steadily increase with age with the largest risk occurring over the age of 80 years (American Geriatrics Society [AGS], 2001). However, the prevalence data for falls may be largely underestimated because it is usually only falls that resulted in hospitalization that are reported and documented (Powell & Myers, 1995), and currently it is estimated that only 2.5% of falls lead to hospitalization (Rubenstein, 2006).

Falls that require hospitalization usually result in fractures or soft tissue injuries (Powell & Myers, 1995), but sometimes the psychological issues that lead to diminished confidence and activity restriction (Yardley & Smith, 2002) can be more debilitating than the physical results of falls. Poor balance confidence can lead to activity restriction, which can then lead to decreased muscle strength, loss of independence, and functional decline (Cumming, Salkeld, Thomas, & Szonyi, 2000; Lach, 2002; Quigley, Hann, & Evitt, 2003; Yardley & Smith, 2002); therefore, creating a never-ending cycle making falls more likely. For this reason, it is important to understand falls risk factors.

1.2 Falls Risk Factors

It is important that individuals who are at risk for falls be identified (Schepens, Goldberg, & Wallace, 2010). The U.S. Public Health Service estimated that approximately two-thirds of falls involving older adults are preventable, and simply identifying risk factors and changing one's environment can help reduce the number of falls that occur in this population (Rubenstein,

2006). The AGS (2001) classified the causes of falls as intrinsic (e.g., disease or health-related), extrinsic (e.g., medication-related), or environmental (e.g., lack of bathroom safety equipment). The AGS (2001) identified the most common risk factors for falls and the risk ratio (RR) or odds ratio (OR) related to each. The factors included muscle weakness (RR/OR = 4.4), history of falls (RR/OR = 3.0), gait deficit (RR/OR = 2.9), balance deficit (RR/OR = 2.9), use of assistive device(s) (RR/OR = 2.6), visual deficit (RR/OR = 2.5), arthritis (RR/OR = 2.4), impaired activities of daily living (ADL; RR/OR = 2.3), depression (RR/OR = 2.2), cognitive impairment (RR/OR = 1.8), and being over the age of 80 (RR/OR = 1.7). Falls usually result from a combination of risk factors, and as the number of risk factors increases, the likelihood of falling also increases (AGS, 2001). Tinetti and colleagues (1988) reported that 27% of older adults with no or one risk factor were likely to suffer a fall compared to 78% of older adults with four or more risk factors.

In addition to the physical risk factors, there are psychological issues related to falls that may elevate risk for falling and therefore, may be important clinical endpoints for falls prevention programs (Jorstad, Hauer, Becker, & Lamb, 2005; Moore & Ellis, 2008). According to the review by Moore and Ellis, the most commonly studied psychological issues related to falls are fear of falling, falls related self-efficacy or falls efficacy (Tinetti, Richman, & Powell, 1990), and balance confidence (Powell & Myers, 1995). Fear of falling is characterized by a persistent concern about falling that may cause older adults to limit physical activities that they may be able to perform in an attempt to avoid a future fall (Tinetti & Powell, 1993). Falls efficacy is an individual's belief in his or her ability to carry out ADL without falling (Tinetti et al., 1990). Finally, balance confidence is a situation-specific form of self-efficacy that is a person's estimate of their ability to maintain balance while performing ADL (Powell & Myers,

1995). Although these constructs are similar in nature, they are in fact unique and care should be taken to ensure that appropriate measurement techniques are employed (Moore & Ellis, 2008; Moore et al., 2011). Furthermore, research is needed to determine the psychological issues that are important to identify within a falls risk screening. Moore and colleagues (2011) compared the measurement properties of four fall-related psychological instruments that assessed falls efficacy, fear of falling, balance confidence, and consequences of falling within a community-based falls risk screening context. Their findings showed that the balance confidence instrument was the only one to distinguish between fallers and non-fallers and to predict total falls risk among a sample of racially and socioeconomically diverse older adults. The researchers concluded that the assessment of balance confidence with the Activities-specific Balance Confidence scale (ABC; Powell & Myers, 1995) may be the better instrument to use within a community-based falls risk screening, but that shorter variations of the instrument should be tested and considered for quicker and easier use within that specific context. Therefore, further psychometric testing of the ABC and its modified versions to measure balance confidence within a community-based falls risk screening context is warranted.

1.3 The Measurement of Balance Confidence

Balance confidence is a situation-specific form of self-efficacy that is a person's perceived ability to maintain balance while performing ADL (Powell & Myers, 1995). This concept is derived from the self-efficacy theory established by Bandura (1977). Bandura (1991) described self-efficacy as an individual's belief in their ability to act in a way that helps them to be successful in certain situations. This belief determines how people behave, think, and feel about their confidence in situations and as a result, it is considered to be an important motivator in determining one's behavior (Bandura, 1977). Therefore, poor balance confidence may cause

an individual to purposely avoid and/or restrict activities. Activity avoidance creates a cycle in which falling actually becomes more likely because older adults are reducing their fitness level and becoming more prone to fall (Vellas et. al, 1997). The loss of muscle mass and strength is common in older adults, and activity restriction only further reduces the strength and mobility needed to remain balanced while performing activities (Howland et al., 1998), which in turn further decreases balance confidence.

Jorstad and colleagues (2005) and Moore and Ellis (2008) identified several instruments that measure balance confidence. These instruments include the 16-item Activities-specific Balance Confidence scale (ABC; Powell & Myers, 1995), a modified version of the Activities-specific Balance Confidence scale (Williams, Hadjistavropoulos, & Asmundson, 2005), the Balance Self-perceptions Test (Shumway-Cook, Baldwin, Polissar, & Gruber, 1997), the 6-item version of the Activities-specific Balance Confidence scale (ABC-6; Peretz, Herman, Hausdorff, & Giladi, 2006), and the Confidence in maintaining Balance Scale (CON-Fbal; Simpson, Worsfold, & Hawke, 1998). Based on the research of Moore and colleagues (2011), only the ABC and its modified versions will be reviewed; however, this will not include the international adaptations of the ABC (e.g., ABC-United Kingdom, ABC-Canadian French, ABC Chinese).

1.4 The 16-Item ABC Scale

The Activities-specific Balance Confidence (ABC) scale is a 16-item survey of balance confidence across a wide spectrum of activity difficulty and it includes detailed descriptions of the activities (Powell & Myers, 1995). An advantage of the ABC is that it measures activities that take place outside of the home (Myers et. al, 1998). The development of the ABC was completed by 15 health professionals and12 older adults, and it was administered to 60 older adults (Powell & Myers, 1995).

Several studies have tested the validity and reliability of the ABC (Hotchkiss et. al, 2004, Myers et. al, 1996, Myers et. al, 1998). Myers and colleagues (1996) examined 60 older adults to compare the psychological indicators of balance confidence to actual physical performance. The ABC was determined to be the best instrument for moderate to highly functioning older adults, and the ABC had excellent validity and test-retest reliability. Furthermore, 37 of the 60 older adults screened in the first ABC study (Powell & Myers, 1995) were contacted one year later to complete the ABC again, and it was found that all of the scores remained relatively stable, but many of those who could not participate in the follow-up study had low initial balance confidence scores and were either hospitalized or deceased (Myers, Fletcher, Myers, & Sherk, 1998).

The validity and reliability of the ABC has also been tested in a variety of populations. More specifically, the ABC was found to be a reliable and valid measure of balance confidence among older adult women (Tally, Wyman, & Gross, 2008), stroke patients (Botner, Miller, & Eng, 2005), and lower-limb amputees (Miller, Deathe, and Speechley, 2003). Each of these studies compared the ABC with other instruments and concluded, based on test-retest reliability and internal consistency, that the ABC was the best instrument available for these specialized groups.

1.5 Modified Version of the 16-Item ABC Scale

A modified version of the ABC has been used to assess balance confidence in older adults (Williams, Hadjistavropoulos, & Asmundson, 2005). In an effort to relate the fear of pain and balance confidence, Williams and colleagues (2005) modified the ABC to use a 21-point box scale as opposed to the percentage ratings. This 21-point box scale has been shown by Chibnall and Tait (2001) to be a better measurement scale for older adults, in comparison to a five-point

verbal rating scale. The box scores were defined by "no confidence" and "confidence," with no confidence indicating a significant lack in confidence in the ability to perform an activity while remaining balanced (Williams, Hadjistavropoulos, & Asmudnson, 2005). The internal consistency of the modified ABC for this sample was .95.

1.6 The 6-Item Version of the ABC

The ABC-6 is a simplified version of the ABC that includes the six most challenging activities from the original ABC. It was developed to be a shorter, quicker version of the balance confidence scale, making it easier to administer in applied settings (Peretz, Herman, Hausdorff, & Giladi, 2006). Whereas the long version (ABC-16) can require up to 20 minutes for administration, in applied settings a quicker assessment of balance confidence, such as the ABC-6, is preferred (Peretz et. al, 2006). The ABC-6 also provides a more true representation of balance confidence by eliminating the questions in the ABC-16 that could potentially inflate the overall confidence levels (Schepens, Godberg, & Wallace 2010).

During the development of the ABC-6, 70 participants with high level gait disorders, 19 participants with Parkinson's disease, and 68 healthy participants were administered the ABC-16 (Peretz et al., 2006). The six questions with the lowest scores were taken from the questionnaire and comparisons were made between the ABC-16 and the ABC-6 to test for reliability and validity. The results showed that the internal consistency of the shortened version of the ABC (ABC-6) was comparable to the longer version (ABC-16). Schepens, Goldberg, and Wallace (2010) also examined the ABC-6 for validity and reliability among older adults. With a sample of 35 adults aged 60 years and over, the researchers administered the ABC-16 and ABC-6 one month apart and found that the scores for the ABC-16 and the scores for the ABC-6 were highly correlated. Furthermore, with good to excellent test-retest reliability, the ABC-6 was ruled to be

a valid and reliable instrument to assess balance confidence (Schepens et. al, 2010). Schepens and colleagues (2010) found that the ABC-6 differentiated between fallers and non-fallers, which the ABC-16 did not, and the ABC-6 showed a strong correlation with the number of falls experienced by the participants that suggested it was a better measure of falls than the ABC-16. The validity of the ABC-6 is further supported by Lohnes and Earhart (2010) who showed moderate to large correlations between the ABC-6 and the Berg balance scale and timed-up-and-go test in 89 persons with Parkinson's disease. While researchers have examined the ABC-6 in comparison to the ABC-16, the use of the ABC-6 is still relatively new and leaves room for further research to be done to examine the validity and reliability of this instrument in applied contexts.

2 SUMMARY

Falls are a common problem for many older adults, and the consequences of falls including a loss of confidence in one's ability to maintain balance can sometimes be more detrimental than a fall itself. Moreover, poor balance confidence can result in an older adult adopting a sedentary lifestyle or restricting activities, leading to functional decline, a loss of muscle mass, and an increased risk of falling. For this reason it is important to identify the best measurement instrument of balance confidence that can be used in a falls risk screening setting. Therefore, the purpose of this study was to examine the validity (i.e., the ability of a test to measure the identified construct) and reliability (i.e., internal consistency of participant responses to scale items) of the ABC-6 in a diverse group of older adults (i.e., diverse according to race, income, and education) within a community-based falls risk screening context. This research further validates the ABC-6 and builds upon previous research by: (a) incorporating a larger sample size, (b) using an underserved group of older adults who are primarily minority, lower

education, and lower income older adults without documented movement disorders, (c) examining the ABC-6 in comparison to an overall falls risk score, and (d) testing it in an applied setting with time constraints. Specifically, we hypothesized that reliability of the ABC-6 would be comparable to the ABC-16 by exhibiting (a) acceptable internal consistency reliability and (b) substantial intraclass correlations (ICC). We also hypothesized that the ABC -16 and ABC-6 would be valid measures of balance confidence by (a) demonstrating moderate to large correlations with physical activity, mobility, balance, and total falls risk scores; (b) discriminating between fallers and nonfallers with fallers reporting significantly lower scores on the ABC-16 and ABC-6 than nonfallers; and (c) evaluating which of the two instruments would be the stronger predictor of total falls risk.

3 METHODS

3.1 Participants

Participants were drawn from a database of 321 older adults who volunteered for a falls risk screening over a 2-year period. Falls risk screenings were completed at 13 sites during year 1 and 8 sites during year 2 (7 of these sites were repeats from year 1). Each participant signed an informed consent approved by the Georgia State University Institutional Review Board. Volunteers were eligible for the falls risk screenings if they were: (a) 50 years of age or older, (b) ambulatory, and (c) demonstrated the ability to comprehend and follow instructions. Participant recruitment was performed using passive techniques such as flyers advertising the upcoming screenings and by word of mouth. For the purpose of this study, in the event that participants completed two falls risk screenings, only their first year data were used.

3.2 Procedures

The community-based falls risk screenings lasted approximately 3 hours at each site. Participants signed up for a 20-minute testing block to visit the following four stations where the tests for the comprehensive falls risk screening instrument were administered by student research assistants : (a) demographics and home environment, (b) medication review, (c) physical functioning (i.e., mobility and balance), and (d) vision. After participants visited all four stations, a total falls risk score was calculated. During the time period between stations and the time required for calculating the total falls risk score (approximately 15 minutes), the participants completed physical activity and balance confidence questionnaires during an interview. Once the questionnaires were completed, a student research assistant reviewed the total falls risk score and several recommendations for falls prevention with each participant.

3.3 Measures

3.3.1 ***Demographic information.*** Information about participant's age, gender, income, education, and race was collected using a questionnaire developed for the falls risk screening study. The demographic information was collapsed into the following groups: (a) income = low ($\leq$\$1306 monthly), medium (\$1307-\$1836 monthly), and high ($\geq$ \$25,000 annually), (b) education = low (high school degree or less), medium (some college or associate's degree) and high = (bachelor's degree or more), and (c) race = Caucasian, African American, and other (i.e., American Indian/Alaskan Native, Hispanic/Latino, or Asian). Income levels for older adult federal housing assistance, as well as Healthy People 2010 (US Department of Health and Human Services, 2010) were used as guidelines for income and education group formation.

3.3.2 ***Comprehensive falls risk screening instrument.*** The Comprehensive Falls Risk Screening Instrument (CFRSI) was used to assess falls risk (Fabre, Ellis, Kosma, Moore, et al.,

2010). The CFRSI is a collection of questions and tests that are grouped to calculate the five following falls risk subscales: (a) history, (b) physical, (c) medication, (d) vision, and (e) home environment. The subscale scores are averaged to produce a total falls risk score. The subscales are weighted according to the AGS (2001) guidelines. The falls risk subscales and the total falls risk scores are converted to a 0 to 100 point scale with higher scores indicating greater falls risk. The CFRSI was validated with samples of community-dwelling older adults (Fabre, Ellis, Kosma, Moore, et al., 2010; Moore, Ellis, Kosma, Fabre, McCarter, & Wood, 2011). The total falls risk score was significantly correlated with self-reported physical activity (r = -0.30, p < .01), self-reported physical function (r = 0.30, p < .01), health-related quality of life (physical health r = -0.44, p < .01; mental health r = -0.24, p < .05), and it discriminated between self-reported fallers and nonfallers (t [276] = 5.53, p < .001; Fabre, Ellis, Kosma, Moore, et al., 2010). Balance confidence, as measured by the ABC-16, was also a significant predictor of the CFRSI total falls risk score (β = -.50, p < .01; Moore et al., 2011).

History subscale**.** Self-reported age (RR/OR = 1.7), history of falls (RR/OR = 3.0; number of falls within the past 12 months and within the past 3 years), assistive device usage (RR/OR = 2.6), and diagnosis of arthritis (RR/OR = 2.4; AGS 2001) was used to calculate the history risk score. Falls risk was higher for participants who reported an age over 80, a history of falls, a diagnosis of arthritis, and/or usage of an assistive device.

Physical subscale**.** Based on the AGS (2001) report that falls risk was related to muscle weakness (RR = 4.4), gait deficits (RR = 2.9), and balance deficits (RR = 2.9), a physical functioning subscale was created to include mobility and balance. The mobility and balance tests used to calculate the physical falls risk score were the Expanded Timed Get Up and Go Test

(ETGUG; Wall, Bell, Campbell, & Davis, 2000) and the Functional Reach Test (FRT; Duncan, Weiner, Chandler, & Studenski, 1990).

The ETGUG (Wall et al., 2000) measured functional mobility. This test requires the participant to stand up from a chair without use of his or her arms, walk 10 meters around a cone as fast as they can, but at a pace that feels comfortable and safe, and return to the chair in a seated position. The ETGUG score is the time (in seconds) taken to complete the task. A higher ETGUG score (meaning reduced functional mobility), indicates greater falls risk.

The FRT (Duncan et al., 1990) measured standing balance. This test requires the participant to reach forward as far as possible with the dominant arm along a measurement tape that is fixed to a wall, without taking a step. The distance reached was measured in inches between the starting position of the middle finger and the final position of the middle finger after reaching forward. Shorter distances reached (meaning reduced standing balance) indicates greater falls risk.

Medication subscale**.** Prescription medications and falls risk was based on the following OR: psychotropics (OR = 1.7), class 1a anti-arrhythmics (OR = 1.6), digoxin (OR = 1.2), and diuretics (OR = 1.1; AGS, 2001; Leipzig, Cumming, & Tinetti, 1999). The participants also reported any medication side effects, if they used multiple pharmacists, and the frequency of pharmacy consult. Falls risk was greater for participants who reported taking four or more prescription medications, experienced side effects, did not fill prescriptions at the same pharmacy, and/or did not have a pharmacist review their current medications.

Vision subscale**.** Participants responded to questions about the use of corrective lenses, lens use compliance, and if they had a visual screen within the previous 12 months, and they also completed a visual acuity test. The visual acuity test required the participant to read the Snellen

eye chart from 20 feet with their corrective lenses (if applicable). Falls risk was higher for participants who had not had a vision test in the last 12 months, did not their wear corrective lenses as prescribed, and/or had Snellen eye scores greater than 20/20.

Environment subscale**.** Information about the home environment was assessed by a 12-item Home Safety Checklist (Centers for Disease Control and Prevention National Center for Injury Prevention and Control, 2004). Yes or no responses were obtained to questions such as "Are stairways well lit with lights at the top and bottom of the stairs?" and "Are your steps, landings, and floors clear of clutter?" More 'no' responses indicated a higher environmental falls risk score because the checklist identified possible home hazards.

3.3.3 ***Physical Activity*****.** The Physical Activity Scale for the Elderly (PASE; Washburn, Smith, Jette, & Janney, 1993) is a self-report measure of physical activity. Participants are asked to recall the frequency (days/week) and duration (hours) of various physical activities such as strength and endurance, sport, occupational, family care, household, yard work, and gardening activities that was performed over the past seven days. Scores on the PASE can be between 0 to 400 (or more), with higher scores indicating greater physical activity participation (Washburn et al., 1993). The PASE is a valid and reliable measure of physical activity for independent-living older adults (Moore et al., 2008; Washburn et al., 1993).

3.3.4 ***Balance Confidence***

Activities-specific Balance Confidence scale-16**.** Balance confidence was measured with the ABC-16 scale (Powell & Myers, 1995). Sixteen ADLs are rated on a 0 to 100% scale (i.e., 0% = no confidence to 100% = complete confidence) and are averaged to produce a total ABC score that was between 0 to 100 with higher scores indicating greater balance confidence (Powell & Myers, 1995). The ABC is a valid and reliable measure of balance confidence among

independent-living older adults (Moore et al., 2011; Myers et al., 1996; Powell & Myers, 1995). Recently, Moore and colleagues (2011) found that the ABC-16 was significantly correlated with the Falls Efficacy Scale-International (r = -.68, p < .01), the modified SAFFE (r = -.68, p < .01), the Consequences of Falling scale (r = -.56, p < .01), the PASE (r = .34, p < .01), and the ETGUG (r = -.45, p < .01). The ABC-16 also successfully discriminated between fallers and nonfallers and had excellent internal reliability (Cronbach's alpha= .93).

Activities-specific Balance Confidence Scale-6**.** The ABC-6 score (Peretz et al., 2006) was calculated from the participant responses on the ABC-16. The six items were averaged to produce a total balance confidence score that was between 0 and 100 with higher scores reflecting greater balance confidence. The ABC-6 has good to very good internal consistency, validity, and reliability in comparison to the ABC-16 (Peretz et. al, 2006; Schepens et. al, 2010). Peretz and colleagues (2006) found Cronbach's alpha to be between .81 and .90 for the ABC-6. Furthermore, in the three groups measured, the ICCs were substantial to almost perfect: 0.78, 0.83, and 0.88.

3 STATISTICAL ANALYSES

Tests for normality and outliers were conducted. To determine reliability of the ABC-6 in comparison to the ABC-16, Cronbach's alpha (α) was calculated to assess internal consistency and intraclass correlations (ICC) were used to assess the relationships between the two instruments. Cronbach's alpha was categorized as excellent (>.9), good (>.8), acceptable (>.7), questionable (>.6), poor (>.5), or unacceptable (<.5; George and Mallery, 2003). ICC were considered to have a poor (.01), slight (.01 - .20), fair (.21 - .40), moderate (.41 - .60), substantial (.61 - .80), or almost perfect (.81 – 1.00) agreement (Landis & Koch, 1977).

The construct validity of the ABC-16 and the ABC-6 were evaluated using Pearson correlation coefficient with 95% confidence intervals (CI) with physical activity (PASE), mobility (ETGUG), balance (FRT), and total falls risk (CFRSI). Correlations between .10-.29 were considered small, correlations between .30-.49 were considered moderate, and correlations $\geq$ .50 were considered large (Cohen). Separate ANOVAs with Bonferroni corrections for alpha were used to discriminate between fallers and nonfallers. The ABC-16 and the ABC-6 were evaluated against the total falls risk score (CFRSI) using stepwise multiple regression. Effect sizes (Cohen's *d*) observed power, and 95% CI were calculated and classified according to threshold values of Cohen (1988) where appropriate. Statistical calculations were significant at alpha level of $p < .05$ unless indicated otherwise.

4 RESULTS

Participants were 321 older adults from 14 community organizations who volunteered for the falls risk screenings over the two-year data collection period. There were 40 repeat participants from year one, 9 who did not meet the inclusion criteria, 8 participants who did not complete some of the falls tests, and 13 who were missing the ABC and the PASE. The final sample for analyses included 251 participants (*M* age = 71.2 years, *SD* = 8.9). Of the final sample, 76.1 % of the participants were female, 72.1% were African American, 62.5% were classified as low-income, and 61% were classified as low-education. Additional participant characteristics are reported in Table 1. All outcome measures were approximately normally distributed (see Table 2).

Table 1. Frequencies of Participant Characteristics

Characteristic		*n*	*%*
Gender	Male	60	23.9
	Female	191	76.1
Marital Status	Single	63	25.1
	Married	51	20.3
	Widowed	79	31.5
	Divorced	57	22.7
	Did not answer	1	00.4
Education	≤ High School	153	61.0
	Some College/Associates	52	20.7
	≥ Bachelors	46	18.3
Annual Income	Low (≤ $1306 monthly)	157	62.5
	Medium ($1307 - $1836 monthly)	27	10.8
	High (≥ $25,000 per year)	41	16.3
	Did not answer	26	10.4
Race	White or Caucasian	60	23.9
	Black or African American	181	72.1
	Other	9	03.6
	Did not answer	1	00.4
Fallen in past 12 months	Yes	83	33.1

	No	167	66.5
	Did not answer	1	00.4
Use of assistive device	Yes	94	37.5
	No	157	62.5
Arthritis	Yes	160	63.7
	No	91	36.3
≥4 Prescription Medications	Yes	137	54.6
	No	114	45.4

Table 2. Mean (M), Standard Deviation (SD), Range, Skewness, and Kurtosis for physical activity, mobility, balance, total falls risk, ABC-16, and ABC-6 scores

	M	SD	Range	Skewness		Kurtosis	
				Statistic	Std. Error	Statistic	Std. Error
PASE	95.88	63.41	00.00-391.30	1.67	.156	3.79	.310
ETUG	25.72	14.94	10.03-96.77	2.32	.154	6.49	.306
FRT	09.36	03.40	01.00-32.00	1.18	.154	6.99	.306
Falls Risk	40.50	11.36	10.91-70.83	-.04	.154	-.19	.306
ABC-16	71.14	24.29	00.00-100.00	-.79	.154	-.16	.306
ABC-6	56.89	30.00	00.00-100.00	-.24	.154	-1.12	.307

Excellent internal consistency reliability was shown by a Cronbach's alpha (α) coefficient of .95 and .90 for the ABC-16 and ABC-6, respectively (George & Mallery, 2003; hypothesis

1a). With an ICC of .81 ($p < .01$), the ABC-16 and ABC-6 have a substantial to almost perfect level of agreement (Landis & Koch, 1977; hypothesis 1b).

Significant moderate to large correlations were found between the ABC-16 and ABC-6 with physical activity, mobility, balance, and total falls risk scores (hypothesis 2a; see Table 3). More specifically, the ABC-16 had large correlations with the ETGUG ($r = -.53$, $p < .01$) and total falls risk ($r = -.64$, $p < .01$). The ABC-16 also had moderate correlations with the FRT ($r = .42$, $p < .01$) and the PASE ($r = .38$, $p < .01$). The ABC-6 had large correlations with the ETGUG ($r = -.56$, $p < .01$) and total falls risk ($r = -.66$, $p < .01$). The ABC-6 also had moderate correlations with the FRT ($r = .45$, $p < .01$) and the PASE ($r = .44$, $p < .01$).

Table 3. Correlations and 95% confidence intervals for ABC-16 and ABC-6

Scale	PASE (95% CI)	ETGUG (95% CI)	FRT (95% CI)	Total Falls Risk (95% CI)
ABC-16	.38** (.26 - .48)	-.53** (-.62 - -.44)	.42** (.32 - .52)	-.64** (-.70 - -.56)
ABC-6	.44** (.33 - .53)	-.56** (-.64 - -.47)	.45** (.35 - .54)	-.66** (-.72 - -.58)

** $p < .01$

Separate ANOVAs with Bonferroni corrections for alpha ($p < .025$) revealed that both the ABC-16, F (1, 251) = 15.77, $p < .01$, $\eta_p^2 = .06$, observed power = .98, $d = .51$, and the ABC-6, F (1, 250) = 11.20, $p = .001$, $\eta_p^2 = .04$, observed power .92, $d = .44$, discriminated between fallers and nonfallers, with fallers reporting significantly lower scores than nonfallers on both scales (hypothesis 2b; see Table 4). Finally, the ABC-6 was the only variable selected to predict total

falls risk in the stepwise multiple regression analysis ($\beta = -.66, p < .01$), accounting for 42.9% of the variance in total falls risk (hypothesis 2c).

Table 4. Means, 95% confidence intervals, and effect sizes of fall-related psychological scales

Scale	Total			Faller		Nonfallers		Effect Size
	M	SD	Range	*M*	*CI*	*M*	*CI*	*d*
ABC-16	71.1	24.3	0-100	62.7	57.6-67.8	75.3	71.7-78.9	.51
ABC-6	56.9	30.0	0-100	48.1	41.7-54.4	61.3	56.8-65.7	.44

5 DISCUSSION

The purpose of this study was to examine the validity and reliability of the ABC-6 in a diverse group of older adults within a community-based falls risk screening context. Overall, the results indicated that the ABC-6 was a reliable and valid measure of balance confidence comparable to the ABC-16. Furthermore, these findings suggest that the ABC-6 is a suitable measure of balance confidence for use among underserved older adults within community-based settings.

The ABC-6 was found to be a reliable measure of balance confidence in comparison to the original ABC-16, which confirmed the first study hypothesis. The excellent internal consistency (George & Mallery, 2003) found in this study is consistent with results reported by previous investigators (Peretz et al., 2006; Powell et al., 1995). In addition, these results showed a substantial to almost perfect agreement between the ABC-6 and ABC-16 (Landis & Koch, 1977), which is also consistent with findings reported by Peretz and colleagues (2006) and

Schepens and colleagues (2010). Therefore, these findings confirm the reliability of the ABC-6 and extend the literature regarding the reliability among diverse older adults in applied settings.

The second study hypothesis was also confirmed by multiple analyses that support the construct validity of the ABC-16 and ABC-6. First, there were moderate to large correlations between the ABC-16 and ABC-6 and the constructs of physical activity, mobility, balance, and falls risk. These results are consistent with previous research (Moore et al., 2011; Myers et al., 1998; Schepens et al., 2010) in that higher balance confidence is associated with better mobility and balance, and greater physical activity participation. Furthermore, these findings extend the literature regarding the validity of the ABC-6 because this is the first study to compare it against the PASE and the CFRSI total falls risk score. The finding that the ABC-6 measure of balance confidence is associated with overall falls risk in a similar manner as the ABC-16 (Moore et al., 2011) has important implications for falls prevention. As noted earlier, psychological issues, such as balance confidence may be to blame for activity restriction (Yardley & Smith, 2002), which can then lead to decreased muscle strength, loss of independence, and functional decline (Cumming et al., 2000; Lach, 2002; Quigley et al., 2003; Yardley & Smith, 2002), and actually increases the risk of a future fall. Although this study design did not allow for tests of cause-and-effect to determine if reduced balance confidence marks the beginning of this dangerous cycle, it does appear to be imperative for health-care professionals and researchers to assess balance confidence during falls risk screenings because of its important relationship with individual falls risk factors and overall falls risk. Moreover, these findings establish the importance of the relationship between balance confidence and falls risk among underserved older adults and within a community-based context.

Further evidence of the construct validity of the ABC-16 and ABC-6 was provided by the ability of both instruments to discriminate between fallers and nonfallers, with fallers reporting significantly lower balance confidence than nonfallers. For the ABC-16, these results are consistent with findings of previous research (Lajoie & Gallagher, 2004; Moore et al., 2011; Myers et al., 1996; Powell & Myers, 1995); however, they do contradict the findings reported by Schepens et al. (2010). While Schepens and colleagues found that the ABC-6 discriminated between fallers and nonfallers, the ABC-16 did not. They noted that the discrepancy in the findings between their study and other studies may have been caused by their inclusion of community-dwelling older adults. However, the present study, as well as previous research (Moore et al., 2011; Myers et al., 1996) also used community-dwelling older adults and found that fallers reported significantly lower scores on the ABC-16 in comparison to nonfallers. Overall, these results provide additional evidence of the construct validity of the ABC-16 and ABC-6, and extend the literature regarding the validity of the ABC-6, by suggesting that both instruments are effective in identifying fall-related psychological differences between fallers and nonfallers among diverse groups of older adults in community-based settings.

Finally, results revealed that the ABC-6 was superior to the ABC-16 in its ability to predict total falls risk. The ABC-6 was the only one of the two instruments selected in the stepwise multiple regression and explained nearly 43% of the variance in the total falls risk score. This is a significant amount of explained variance considering that overall falls risk is influenced by a variety of intrinsic, extrinsic, and environmental factors beyond the psychological risk factor of balance confidence (AGS, 2001). Moore et al. (2011) previously examined the original ABC-16 in comparison to three other fall-related psychological instruments and their ability to predict the CFRSI total falls risk score. They reported that the

ABC-16 was the only significant predictor of falls risk and it explained about 25% of the variance. Moore et al. concluded that the ABC-16 may be the better instrument to select to measure fall-related psychological difficulties within a community-based context. Therefore, the findings from the current study suggest that researchers may want to consider using the shorter, ABC-6 for the assessment of balance confidence at community-based falls risk screenings when time constraints are more likely. These findings also provide additional evidence for the construct validity of the ABC-6 and further extend the research because of its ability to predict total falls risk among underserved older adults.

There are several strengths of this study that extend the previous research on the evaluation of the psychometric properties of the ABC-6. First, there have been repeated calls for the inclusion of hard-to-reach and underserved populations in health-related research (Hendrickson, 2005), as well as interest in testing the reliability and validity of fall-related psychological instruments among diverse samples of older adults (Moore et al., 2008). Although the study sample was comprised of mostly female participants, and a much larger percentage than the 50.8% in the general population (U.S. Census Bureau, 2010), this is comparable to previous research examining the ABC-6 (Schepens et al., 2010), and it is not uncommon within health-related research (Backer, Gregory, Jaen, & Crabtree, 2006). However, it is important to note that the larger falls risk study from which this study's data were drawn intentionally targeted community centers and senior residences with African American, low-income, and low-education older adults, who are often considered a hard-to-reach population. Indeed, this sample had a greater representation of African Americans and fewer people with at least a Bachelor's Degree compared to 12.6% and 27.9%, respectively found in the general population (U.S. Census Bureau, 2010). In addition, 62.5% of this sample had an income less than $15,672

annually, much less than the average annual income of $31,408 for individuals of similar age, based on the 2010 Census. Although generalizability may be limited, the sample demographics are strength of the research because the findings demonstrate that the ABC-6 can successfully be used as a measure of balance confidence among a broad range of older adults that are not well-represented in this type of research.

Second, recent research findings indicate that African Americans and low-income older adults have greater overall falls risk in comparison to their counterparts (Ellis, Kosma, Fabre, Moore & Wood, in press) and the ABC-6 scores from this study provide additional evidence to support this conclusion. Specifically, the average ABC-6 score in this sample was 56.88; whereas the average ABC-6 score was 74.38 for Schepens and colleagues (2010) who surveyed a primarily white, healthy sample. Peretz and colleagues (2006) also surveyed a healthy group of older adults and found a mean ABC-6 score to be 92.7. This research highlights the role of balance confidence as a contributing factor to falls in the hard-to-reach low-income, African American population.

Finally, another important contribution of this study was that it was the first to show the relationship between the ABC-6 and physical activity. Prior to this study, Schepens and colleagues (2010) compared the ABC-6 to mobility and balance, but there had been no supporting evidence showing that one's level of physical activity may have a significant correlation with the shortened version of the ABC that targets the most challenging ADLs of the original. Moreover, this study was also the first to evaluate the ABC-6 among independent-living older adults based on its ability to predict falls risk using the CFRSI (Fabre et al., 2010). This is a significant finding considering the CFRSI was designed and validated as an instrument to measure overall falls risk based on multiple risk factors (Fabre et al., 2010). As shown by the

variance accounted for by the ABC-6 in reference to the overall falls risk, the study findings confirm that balance confidence is an important falls risk factor to examine.

There were some limitations to this investigation. First, the study participants were volunteers. This may have resulted in a bias related to the study being mostly comprised of older adults that are concerned about their falls risk. Therefore, the participants in this study may not represent all community-dwelling older adults. However, most studies are comprised of volunteers and may include a similar limitation. It is also important to note that 33% of the study participants reported a fall during the year prior to the falls risk screening. This is consistent with population estimates that approximately one-third of older adults over the age of 65 will experience at least one fall annually (Centers for Disease Control and Prevention, 2011) making it possible that the study sample is representative of the larger older adult population. Still, future investigators should attempt to recruit community members outside of the activities at the community-based organizations.

A second limitation of this study was that the participants only completed the ABC-16, and these scores were used to calculate the ABC-6 results. It is possible that participants may have rated their balance confidence differently if they were only asked to rate their level of confidence on the ABC-6 questions. Therefore, future psychometric evaluations of the ABC-6 should be based on these six questions alone. Finally, in addition to the ABC, many of the study outcomes were derived from self-reported information. While it is not uncommon for similar studies to also be largely based on self-reported information, it is possible that the accuracy of the results was affected by recall issues and social desirability bias, with participants more likely to overestimate balance confidence, physical activity participation, etc. Future studies should consider administering a mini-mental state exam to potentially recognize any mental issues that

may affect one's ability to recall events, and questionnaires should also be administered in a private, one-on-one interview session to reduce social desirability bias.

In summary, the study findings provide additional evidence for the reliability and validity of the ABC-6 as a psychological measure of balance confidence among diverse older adults. Moreover, these findings suggest that the ABC-6 may be the better instrument to choose for community-based falls risk screening based on its ability to not only discriminate between fallers and nonfallers, but also explain the most variance in total falls risk. The ABC-6 may also be a more practical balance confidence assessment tool than the ABC-16 in settings where balance confidence, as well as other falls risk factors, must be measured accurately, but quickly.

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APPENDICES

Appendix A

PARTICIPANT INFORMATION

Date _____

Identification

1. **Name:** Last: _____ First: _____ Middle: _____

2. **Marital Status:** ☐ S ☐ M ☐ W ☐ D

3. **Gender:** ☐ Male ☐ Female

4. **Address:**

_____

Street/PO Box Town State Zip

5. **Telephone Number:** _____

6. **History of Diseases:**

_____

_____

7. **What is your race or ethnic background?**
   a. _____ White or Caucasian
   b. _____ Black or African American
   c. _____ American Indian / Alaskan Native
   d. _____ Hispanic or Latino (Mexican, Puerto Rican, Cuban, Other)
   e. _____ Asian (Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, Other)
   f. _____ Native Hawaiian and Other Pacific Islander
   g. _____ Other (specify: _____)

8. **Household Size:**
   a. _____ 1 person
   b. _____ 2 people
   c. _____ 3 people
   d. _____ 4 people
   e. _____ 5 people

9. **Education Level (check highest level):**
   a. _____ Less than 9th grade
   b. _____ Some high school, no degree
   c. _____ High school graduate/GED
   d. _____ Some college, no degree
   e. _____ Associated degree
   f. _____ Bachelor's degree
   g. _____ Graduate or professional degree

10. **Income:**
   a. _____ $776 or less monthly
   b. _____ $1041 or less monthly
   c. _____ $1306 or less monthly
   d. _____ $1571 or less monthly
   e. _____ $1836 or less monthly
   f. _____ Annual $25,000 to $34,999
   g. _____ Annual $35,000 to $49,999
   h. _____ Annual $50,000 or greater

Appendix B

COMPREHENSIVE FALLS RISK SCREENING INSTRUMENT

MEDICAL/FALL HISTORY

	Yes/No	Points
Date of Birth _____ & Age _____	**X**	calculated
FALLS 1: Have you fallen in the past 3 years? Yes = 3.0 No = 1* *If no, record "N/A" for falls 2 and enter a "0" for falls 2.		
FALLS 2: Were any falls within the past 12 months? Yes = - 0.0 No = - 0.5		
Do you use any walking aids (cane, walker etc.)? Yes = 2.6 No = 1		
Do you have Arthritis? Yes = 2.4 No = 1		

MOBILITY/BALANCE

	Score	Points
Functional Reach Test (inches)		calculated
Get Up and Go Test score (seconds) Check: 3 Meter _____ OR 10 Meter _____		calculated

MEDICATIONS

	Yes/No	Score
M1. Complete the medication form. Take the greater value of the following: 4 or more prescription meds = 2.5 Psychotropic Meds (for mood, behavior) = 1.9 points Anti-arrhythmic Meds = 1.7 points Digoxin/Lanoxin (for heart failure) = 1.6 points Diuretics = 1.1 None of the Above = 1	**X**	
M2. Have you experienced any of the following side effects due to your medications: drowsiness, dizziness, impaired balance? Yes = 1.5 No =1		
M3. Do you fill ALL of your prescriptions at the same pharmacy or had a pharmacist review your current medications? Yes = 1.0 No = 1.5		

VISION

	Yes/No	Score
V1. Do you have a prescription for corrective lenses?* *If no record "N/A" for V2 and enter a "1" for V2.		1
V2. Do you wear your corrective lenses as prescribed? Yes = 1 pts No = 2 pt		
V3. Have you had a vision test in the past 12 months? Yes = 1 pts. No = 1.6 pt. Date of last checkup:_____		
V4. Snellen Score w/ lenses:_____		calculated

Home Assessment Chart

1. Do you have handrails on both sides of all stairways in your home – including the outside stairs? ☐ No Stairs ☐ Yes ☐ No

2. Do the stair rails extend the full length of the stairway? ☐ No Stairs ☐ Yes ☐ No

3. Are stairways well lit with lights at the top and bottom of the stairs? ☐ No Stairs ☐ Yes ☐ No

4. Do you have nightlights to help light your bathrooms, bedrooms, and hallways during evening hours? ☐ Yes ☐ No

5. Are you able to turn on a light immediately upon entering a room? ☐ Yes ☐ No

6. Do you have grab bars in your bath and shower stalls as well as on the sides of the toilet? (Never use towel racks or soap dishes as grab bars, they can easily come loose, causing a fall) ☐ Yes ☐ No

7. Do you have a non-slip mat or safety decals in your bath and shower? ☐ Yes ☐ No

8. Do you remove soap build-up in the tub and shower on a regular basis to avoid slipping? ☐ Yes ☐ No

9. If you have area rugs, do they have rug-liners underneath, dual-sided tape, or non-skid backs? ☐ No Rugs ☐ Yes ☐ No

10. Are your steps, landings, and floors clear of clutter? (Always keep these areas clear, and don't forget to safely tuck telephone and electrical cords out of walkways) ☐ Yes ☐ No

11. Do you keep floors clean by promptly wiping up grease, water, and other spills? ☐ Yes ☐ No

12. Are things you use often stored on easy-to-reach shelves, so that you don't need to reach too high or bend too low to get them? ☐ Yes ☐ No

Total number of "No" responses* _____
*This does not include "No Stairs" or "No Rugs".

Appendix C

PHYSICAL ACTIVITY SCALE FOR THE ELDERLY (PASE)

LEISURE TIME ACTIVITY

1. Over the past 7 days, how often did you participate in sitting activities such as reading, watching TV or doing handcrafts?

[0.] NEVER	[1.] SELDOM	[2.] SOMETIMES	[3.] OFTEN
GO TO Q.#2	(1-2 DAYS)	(3-4 DAYS)	(5-7 DAYS)

1a. What were these activities?

_____

1b. On average, how many hours per day did you engage in these sitting activities?

[1.] LESS THAN 1 HOUR [2.] 1 BUT LESS THAN 2 HOURS

[3.] 2-4 HOURS [4.] MORE THAN 4 HOURS

2. Over the past 7 days, how often did you take a walk outside your home or yard for any reason? For example, for fun or exercise, walking to work, walking the dog, etc.?

[0.] NEVER	[1.] SELDOM	[2.] SOMETIMES	[3.] OFTEN
GO TO Q.#3	(1-2 DAYS)	(3-4 DAYS)	(5-7 DAYS)

2a. On average, how many hours per day did you spend walking?

[1.] LESS THAN 1 HOUR [2.] 1 BUT LESS THAN 2 HOURS

[3.] 2-4 HOURS [4.] MORE THAN 4 HOURS

3. Over the past 7 days, how often did you engage in light sport or recreational activities such as bowling, golf with a cart, shuffleboard, fishing from a boat or pier or other similar activities?

[0.] NEVER	[1.] SELDOM	[2.] SOMETIMES	[3.] OFTEN
GO TO Q.#4	(1-2 DAYS)	(3-4 DAYS)	(5-7 DAYS)

3a. What were these activities?

_____

3b. On average, how many hours per day did you engage in these light sport or recreational activities?

[1.] LESS THAN 1 HOUR [2.] 1 BUT LESS THAN 2 HOURS

[3.] 2-4 HOURS [4.] MORE THAN 4 HOURS

4. Over the past 7 days, how often did you engage in moderate sport and recreational activities such as doubles tennis, ballroom dancing, hunting, ice skating, golf without a cart, softball or other similar activities?

[0.] NEVER	[1.] SELDOM	[2.] SOMETIMES	[3.] OFTEN
GO TO Q.#5	(1-2 DAYS)	(3-4 DAYS)	(5-7 DAYS)

4a. What were these activities?

_____

4b. On average, how many hours per day did you engage in these moderate sport and recreational activities?

[1.] LESS THAN 1 HOUR [2.] 1 BUT LESS THAN 2 HOURS

[3.] 2-4 HOURS [4.] MORE THAN 4 HOURS

5. Over the past 7 days, how often did you engage in strenuous sport and recreational activities such as jogging, swimming, cycling, singles tennis, aerobic dance, skiing (downhill or cross-country) or other similar activities?

[0.] NEVER	[1.] SELDOM	[2.] SOMETIMES	[3.] OFTEN
GO TO Q.#6	(1-2 DAYS)	(3-4 DAYS)	(5-7 DAYS)

5a. What were these activities?

_____

5b. On average, how many hours per day did you engage in these strenuous sport and recreational activities?

[1.] LESS THAN 1 HOUR [2.] 1 BUT LESS THAN 2 HOURS

[3.] 2-4 HOURS [4.] MORE THAN 4 HOURS

6. Over the past 7 days, how often did you do any exercises specifically to increase muscle strength and endurance, such as lifting weights or pushups, etc.?

[0.] NEVER	[1.] SELDOM	[2.] SOMETIMES	[3.] OFTEN
GO TO Q.#7	(1-2 DAYS)	(3-4 DAYS)	(5-7 DAYS)

6a. What were these activities?

_____

6b. On average, how many hours per day did you engage in exercises to increase muscle strength and endurance?

[1.] LESS THAN 1 HOUR [2.] 1 BUT LESS THAN 2 HOURS

[3.] 2-4 HOURS [4.] MORE THAN 4 HOURS

HOUSEHOLD ACTIVITY

7. During the past 7 days, have you done any light housework, such as dusting or washing dishes?

[1.] NO [2.] YES

8. During the past 7 days, have you done any heavy housework or chores, such as vacuuming, scrubbing floors, washing windows, or carrying wood?

[1.] NO [2.] YES

9. During the past 7 days, did you engage in any of the following activities?

Please answer YES or NO for each item.

		NO	YES
a.	Home repairs like painting, wallpapering, electrical work, etc.	1	2
b.	Lawn work or yard care, including snow or leaf removal, wood chopping, etc.	1	2
c.	Outdoor gardening	1	2
d.	Caring for an other person, such as children, dependent spouse, or an other adult	1	2

WORK-RELATED ACTIVITY

10. During the past 7 days, did you work for pay or as a volunteer?

[1.] NO [2.] YES

10a. How many hours per week did you work for pay and/or as a volunteer?

_____ HOURS

10b. Which of the following categories best describes the amount of physical activity required on your job and/or volunteer work?

[1] Mainly sitting with slight arm movements. [**Examples:** office worker, watchmaker, seated assembly line worker, bus driver, etc.]

[2] Sitting or standing with some walking. [**Examples:** cashier, general office worker, light tool and machinery worker.]

[3] Walking, with some handling of materials generally weighing less than 50 pounds. [**Examples:** mailman, waiter/waitress, construction worker, heavy tool and machinery worker.]

[4] Walking and heavy manual work often requiring handling of materials weighing over 50 pounds. [**Examples:** lumberjack, stone mason, farm or general laborer.]

Appendix D

The Activities-specific Balance Confidence (ABC) Scale

For *each* of the following activities, please indicate your level of self-confidence by choosing a corresponding number from the following rating scale:

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

If you do not currently do the activity in question, try to imagine how confident you would be if you had to do the activity. If you normally use a walking aid or hold onto someone, rate your confidence as if you were using these supports. If you have any questions, please ask.

How confident are you that you can maintain your balance and remain steady when you…

1. walk around the house? _____%
2. walk up or down stairs? _____%
3. bend over and pick up a slipper from the front of a closet floor? _____%
4. reach for a small can off a shelf at eye level? _____%
5. stand on your tip toes and reach for something above your head? _____%
6. stand on a chair and reach for something? _____%
7. sweep the floor? _____%
8. walk outside the house to a car parked in the driveway? _____%
9. get into or out of a car? _____%
10. walk across a parking lot to the mall? _____%
11. walk up or down a ramp? _____%
12. walk in a crowded mall where people rapidly walk past you? _____%
13. are bumped into by people as you walk through the mall? _____%
14. step on or off an escalator while holding onto a railing? _____%
15. step on or off an escalator while holding parcels and cannot hold onto the railing? _____%
16. walk outside on icy sidewalks? _____%

Denotes an ABC-6 activity

Instructions for scoring:

Total the ratings (possible range = 0 to 1600) and divide by 16 (or the number of items completed) to get each person's ABC score. If a person qualifies her response to items 2, 9, 11, 14, or 15, solicit separate ratings and use the lowest confidence of the two (as this will limit the entire activity, e.g., likelihood of using stairs). Total scores can be computed if at least 12 of the 16 items are answered and alpha does not decrease appreciably with the deletion of item 16-icy sidewalks-for administration in warmer climates.

Reference:

Powell, L., & Myers, A. M., (1995). The Activities-specific Balance Confidence (ABC) Scale. *Journal of Gerontology: Medical Sciences, 50,* M28-M34.